Food Supply Chain Management and Contracting: Improving Conditions for Small-scale Paprika Farmers in Central Malawi

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by

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Acronyms

ASCM	Agri-food Supply Chain Management
ASTA	American Spice Trade Association
ASWAp	Agricultural Sector Wide Approach
CAADP	Comprehensive Africa Agriculture Development Programme
CF	Contract farming
CISANET	Civil Society Agriculture Network
Coop	Cooperative (as farmers' cooperative)
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign direct investment
FUM	Farmers Union Malawi
HMI	High monthly income
IBM	Inclusive business model
LLA	Large land allocated
LMI	Low monthly income
MDGs	Millennium Development Goals
MGDS II	Malawi Growth and Development Strategy II
MLA	Medium land allocated
MMI	Medium monthly income
mT	Metric tonnes (1000 kilograms)
NAP	National Agricultural Policy
NASFAM	National Smallholder Farmers' Association of Malawi
NEPAD	New Partnerships for Africa's Development
NES	National Export Strategy
NGO	Non-governmental organisation
NIE	New Institutional Economics
OECD	Organisation for Economic Co-operation and Development
QUAL	Qualitative inquiry
QUAN	Quantitative inquiry
SC	Supply chain
SCM	Supply Chain Management
SDGs	Sustainable Development Goals

SLA	Small land allocated
SLF	Sustainable Livelihoods Framework
TCE	Transaction Cost Economics
UN	United Nations
UNIDROIT	International Institute for the Unification of Private Law
VC	Value chain
VCA	Value Chain Analysis
WB	World Bank
WHO	World Health Organization
WTO	World Trade Organization

Declaration of Academic Honesty and Originality

This is to certify that the work I am submitting is my own and has not been submitted for another degree either at University College Cork or elsewhere*. All external references and sources are clearly acknowledged and identified within the contents. I have read and understood the regulations of University College Cork concerning plagiarism.

*As part of the Joint Doctoral Degree, this work was submitted simultaneously to the Technical University of Madrid, Spain.

Signature:

Date: 30th March 2017

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This one is for you!

I am not sure exactly what heaven will be like, but I know that when we die and it comes time for God to judge us, He will not ask, 'How many good things have you done in your life?'. Rather He will ask, 'How much love did you put into what you did?'.

Mother Teresa of Calcutta (1910-1997)

Abstract

Global population growth and increasing incomes across the world are resulting in consumers' rising demand for quality and diverse foods. Trade liberalisation and modernisation of production, processing and distribution systems enable agro-food companies to quickly access raw materials from farmers. Thus, efficient supply chains have a key role to play in the global marketing of foods. They also significantly contribute to satisfying consumers' needs and responding to emerging food trends. The organisation of the product flow among farmers, buyers, processors and customers through contracts represents an increasingly important marketing channel in modern food supply chains due to its potential to decrease costs and increase profits for the participants in the chain. However, vulnerable small-scale farmers in developing countries such as Malawi are often excluded from the benefits of the transformed food industry. Contract farming is recognised as one of the tools linking farmers with modern agro-food supply chains, which enables Malawian small-scale farmers to improve their livelihoods. This study explored, examined and addressed the key challenges in contract farming arrangements in the paprika supply chain in Central Malawi. A mixed methods approach was used to collect qualitative and quantitative data. A total of 428 household questionnaires were administered to contracted small-scale paprika farmers in two Malawian districts. These were supplemented with ten focus group interviews with small-scale farmers, 21 semi-structured stakeholder interviews, ten expert semi-structured interviews, field observations and two focus group discussions with stakeholders. The study found that the quality of communication among the key participants in the paprika supply chain was low. Furthermore, the enabling environment provided limited access to input and services for small-scale farmers. The paprika contract secured quality seeds and extension services to contracted small-scale farmers. Nevertheless, the provision of fertilisers, pesticides, chemicals, storage and transportation services were not part of the Malawian contract. Poor contract design and side-selling practices posed a threat to the chain's efficiency and sustainability. Small-scale farmers gained benefits from the contracted production but contracting itself was not a sufficient strategy to sustain their livelihoods throughout the year. More dedicated involvement of farmers' organisations and NGOs in empowering small-scale farmers, and the Government's presence through the national Contract Farming Strategy could contribute to better efficiency and sustainability of the chain. The study's main contributions include: adding new evidence on contract farming performance in developing countries; highlighting the importance of contract design and the issue of side-selling for improved contracting conditions, and demonstrating how dissemination of the study's findings can be incorporated into study design to increase the validity, rigour and impact of the research.

PART ONE: INTRODUCTION

Chapter 1 Introduction to the Study

1.1 Introduction

The first chapter sets the foundation for the study. The introduction to the study, background and justification are first presented. The chapter further outlines the research problem, aims, objectives and questions. The overview of research methodology and thesis outline is given. The chapter continues with the research scope and limitations. Expected outputs in academic and practical aspects conclude this chapter.

1.2 Introduction to the Study

In the early decades of the 21st century, the world is facing a growing population and rising demand for quality and diverse food. The agricultural sector and food industry are expected to perform efficiently and promptly to satisfy consumers' needs, which puts pressure on available resources and agri-food[1] supply chains. Due to globalisation and market liberalisation, the borders of supply chains are vanishing, meaning that raw materials might be produced in Africa, processed in Asia and finally consumed in the United States of America. Thus, the food industry is becoming more global and supply chains are transforming to reach vertical integration that enables better communication and distribution among different players at distant locations (Reardon *et al*., 2009; Maertens *et al.*, 2012). Managing modern agri-food supply chains often entails some agreement between producers, buyers, processors, distributors and retailers.

One of the ways of organising relations in supply chains is through contract farming (abbreviation CF). Contract farming is defined as an institutional arrangement between two (or more) parties in which the first party supplies inputs and extension services needed for the production of the contracted crop and the second party produces and sells that crop to the first party (Vermeulen and Cotula, 2010; Jia and Bijman, 2013). Contracts are often signed between exporters or processors and

[1] The term 'agri-food' used throughout this study refers to a system of commercial food production through farming. Generally, the system involves input providers, producers, processing units, logistics and financing services needed for the product to reach the consumer (Garcia-Winder *et al*., 2009).

farmers. The literature reveals both the benefits and challenges encountered in contracted production. Benefits include improved access to technology and inputs, a secured outlet and price for the produce, and improved productivity, quality and income generation for farmers. On the other side, contract farming might influence farmers' indebtedness and loss of control over the land, cause unbalanced relations in the household and rural communities and shift traditional production patterns towards trendy cash crops. Despite its potential threats for vulnerable farmers, contract farming is frequently promoted by Governments in developing countries[2] as means for poverty alleviation and rural development due to its potential to link small-scale farmers with profitable markets.

Malawi is one of the poorest countries in the world, with a population of around 16.7 million and US$ 255 GDP *per capita*, and with an economy that is largely based on agriculture and small-scale farmers as the driving force for economic growth (World Bank-WB, 2015, 2016a). In Malawi, small-scale farmers mostly cultivate staple food crops and are marginalised in the case of high-value export cash crops, such as tobacco, sugar and tea (see chapter 6, Figure 6.1 for the details on the study area). Therefore, contract farming in Malawi poses the opportunity for small-scale farmers to be included in the global food market and gain meaningful profits to improve their livelihoods.

1.3 Background to the Study

According to the United Nations (UN) (2015a) estimates, the world population reached 7.3 billion in 2015 and continued to grow by 1.18% annually, which accounts for an additional 83 million people every year. The fastest growing area in population was Africa, where the population grew 2.55% per year in 2010-2015. By 2050, a significant share of the population growth will take place in African countries, adding 1.3 billion people to the global population (UN, 2015a). In addition, by 2100, ten African countries, including Malawi, will experience an increase in their population by at least five-fold (UN, 2015a).

[2] The term 'developing country' usually refers to a country with predominately agriculture-based economy and poorly developed industrial sector. World Bank does not use this term anymore but rather defines a 'low-income' country as a country that had gross national income *per capita* as $1,025 or less in 2015 (WB, 2016c). This study however uses the term 'developing country' when refering to countries in African, Asian and Latin American regions within the framework given by the United Nations (UN, 2014, p. 146).

Population growth has a significant impact on the global food demand and production. The rising number of consumers, growing *per capita* incomes and continuous urbanisation are increasing the demand for more diverse, quality and safe food, and shifting dietary patterns towards fruits, vegetables and animal products relative to the traditional starches (Minot and Roy, 2007; Organisation for Economic Co-operation and Development-OECD and Food and Agriculture Organization of the United Nations-FAO, 2015). Alexandratos and Bruinsma (2012) suggested that the demand for agricultural products would rise by 1.1% per year between 2005-2050. According to the World Resources Institute (WRI) (2013), to produce enough food for 9.7 billion of people on Earth expected by 2050, it is estimated that the amount of produced food will have to increase by 70% compared to the amount of food produced in 2006. The needed increase in food supply mostly relies on additional agricultural production, which is achieved through improved production levels and yield increase, and by expanding the land used for agriculture.

Developing countries have an important role in providing food for the world. In 2013, 60% of the total cereals and 62% of the total meat produced were supplied from the developing world (FAO, 2015a, 2015b). The share of cereals and meat supply from Sub-Saharan countries in 2013 was 4.6% and 6% respectively (FAO, 2015a, 2015b). It is estimated that, in developing countries, 80% of the needed increase in agricultural production would be a result of increased yields and cropping intensity, while only 20% would come from the expansion of the arable land (Alexandratos and Bruinsma, 2012).

Although the agricultural sector provides the majority of the food for the developing world, small-scale farmers in developing countries are often living in poverty[3] (FAO, 2001; Aksoy and Hoekman, 2010). Indeed, the majority of the world's poor (70%) are located in rural areas with agriculture as the primary source of income (WB, 2016b). The most prominent challenges for poor farmers in developing countries include exclusion from the high-value markets and limited opportunities to earn

[3] According to the UN's statement, '*poverty is a denial of choices and opportunities, it is a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and clothe a family, not having a school or a clinic to go to, not having the land on which to grow one's food or a job to earn one's living, nor having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities*.' (UN, 1998).

sufficient income due to a particular food supply chain's structure which directs benefits to buyers (i.e. processors, exporters, retailers, etc.) or wealthier farmers (Weatherspoon and Reardon, 2003; Fréguin-Gresh *et al*., 2012; da Silva and Rankin, 2013). In 2015, the UN introduced Agenda 2030 and seventeen comprehensive Sustainable Development Goals (SDGs) with 169 targets to promote inclusive industrialisation in developing countries and include small-scale farmers in markets (UN, 2015b). The key message throughout the SDGs Agenda 2030 is a commitment to eradicating poverty in all its forms and dimensions (UN, 2015b). In doing so, Goal 9 advocates for establishing a resilient infrastructure and promoting inclusive industrialisation in developing countries (UN, 2015b). In specific terms, Target 9.3 advocates for efficient integration of small-scale enterprises into global chains and markets, which represents a starting point for this study.

1.4 Justification for the Study

The increasing academic interest in challenges related to efficiency and sustainability of contract farming in developing countries has resulted in numerous case studies being carried out in the past two decades (see studies in Appendix A). Nevertheless, solutions for improving the efficiency and sustainability of supply chains operated through contract farming still do not include comprehensive recommendations on how all involved stakeholders could contribute to the supply chain's progress. The justification for this study is based on the current knowledge gaps, particularly in the following areas:

(i) The need for continuous research and discussion regarding contract farming's efficiency and sustainability - Contract farming is re-emerging in developing countries after gaining more approval from the academic community and development practitioners as a prospective business model that empowers small-scale farmers, compared to early stages of modern CF in 1980s and 1990s when the main critique was directed against CF's exploitative nature (Bijman, 2008). Also, the food industry in the 21st century requires a more integrated approach in supplying food. As raw materials come from distant locations, high-level processing, logistics and quality are required in today's supply chains. Therefore, contracts within supply chains are becoming a tool to coordinate all requirements and link small-scale farmers with high-value global markets, ensure income generation and open access

to valuable information and inputs, as suggested by the extensive CF literature (Minot, 1986; Key and Runsten, 1999; Kherallah and Kirsten, 2001; da Silva, 2005; Shepherd, 2007; Singh, 2007; Bijman, 2008; Birthal, *et al.*, 2008; Miyata *et al.*, 2009; Prowse, 2012; Will, 2013; Cai *et al*., 2014). Involvement in the global food market exposes supply chain players to the risk of uncertainty, especially regarding volatile international commodity and input prices. This risk implies that CF has its merits but is not without certain pitfalls.

Since contract farming has a significant impact on the livelihoods of small-scale farmers, it is necessary to provide a constant assessment and recommendations for enhancing contracting models. Thus, the evidence on the efficiency and sustainability of contract farming needs to be continuously updated. This study generated new lessons on contract farming to advance this field. The study extended on previous findings from the relevant contract farming literature and joined existing efforts to enhance the efficiency and sustainability of contract farming in developing countries through research.

(ii) The lack of empirical studies on contract design in food supply chains - Although both theoretical and empirical bodies of the literature are vast on issues related to contract farming, current research does not provide sufficient evidence on the best practices in designing contracts for small-scale farmers in developing countries. For example, even though the knowledge of contract design is significant for theoretical and applied purposes, there is a lack of research on how companies design contracts (Brousseau, 2008). According to Smalley (2013), exit options that are given to small producers in contracts should be further explored. There are many new types of contracts emerging, so future research should compare different design features (Bolwig *et al*., 2009). Also, Sykuta and Parcell (2002) and Vavra (2009) argued that the access to contract documentation and the privacy surrounding contracts hinder better understanding of contracting issues. To date, in-depth research on contract design challenges in developing countries is missing, with the exception of studies done by Cotula (2011), Prowse (2012) and Pultrone (2012) and the new Legal Guide (2015) that serves as a reference point. For instance, empirical studies from Schipmann and Qaim (2011), Huh *et al*. (2012) and Abebe *et al*. (2013) refer only to one part of the contract (e.g. preferences for provisions or exit options) but do not

consider the entire contract. This study is addressing the issue of the contract design in Malawi's paprika supply chain using an authentic case from the field and analysing all clauses contained in the contract to make relevant inferences.

(iii) The lack of empirical evidence on the state of contract farming in the paprika supply chain in Malawi - Indications of possible progress for Malawi's economy are found in the emerging paprika sector. Studies done in Malawi explored the significance of paprika (*Capsicum Annuum*, L.), which has the potential to contribute to an increased share of Malawi's trade (Agar and Chiligo, 2008; CYE Report, 2009; Makoka, *et al*., 2010; National Statistical Office Malawi-NSO, 2014). Growing international demand for paprika makes it a valuable export commodity, while Malawi's comparative economic advantage in low input technology presents opportunities for small-scale farmers (Kumwenda and Madola, 2005; Makoka *et al*., 2010). Also, small-scale farmers' advantages in agricultural production include access to abundant family labour, lower supervision costs and intensive use of land (Hazell *et al.*, 2007; Key and Runsten, 1999; Singh, 2011; Wiggins, Kirsten, and Llambi, 2010). Makoka *et al*. (2010) argued that financial incapacity and low productivity, coupled with poor crop quality and little value addition, are the most challenging problems for the majority of Malawian small-scale farmers in attempting to with the high-value agricultural markets.

The paprika sector has potential to boost the Malawian economy, however, recent literature does not report on the status of contract farming activities in this sector. Makoka *et al.* (2010) focused on the value chain analysis of paprika, and up to now, this is the most recent study available on the paprika sector in Malawi. The CYE Report (2009) also explored the value chain for paprika. Both studies only implicitly considered contract farming arrangements for paprika. In contrast, Agar and Chiligo (2008) more thoroughly explored contracts for paprika in Malawi. Since 2008, the structure of the paprika market in Malawi changed significantly. The principal contracting companies for exporting paprika active in 2008 no longer operate on the market in the 2014-2016 period. Considering the value of the paprika supply chain for contracting arrangements and Malawian small-scale farmers, this study sought to update evidence on the status of contracting in Malawi's paprika sector to provide needed empirical evidence for both academic and practical purposes.

(iv)The lack of a mixed methods approach in current studies on contract farming - Notable studies concerning contract farming have been conducted in the past. Many of those studies addressed issues related to contracting from a quantitative perspective only (especially Miyata *et al*., 2009; Bellemare, 2012; Narayanan, 2014; Briones, 2015; Girma and Gardebroek, 2015) or using solely qualitative inquiry (e.g. Strohm and Hoeffler, 2006; Fréguin-Gresh and Anseeuw, 2013; Han *et al.*, 2013). Recent studies using both quantitative and qualitative methods are scant (e.g. Fréguin-Gresh *et al*. 2012; Prowse and Moyer-Lee, 2014). This study contributes to bridging the methodological gap by employing mixed methods approach and adding comprehensive evidence from the perspectives of various stakeholders in contractual relations. By combining both qualitative and quantitative data, the analysis allows more in-depth interpretation of the studied phenomenon.

(v) Context-specific implications and generalizability - The justification for the study also arises from the importance of contract farming for Malawian agriculture and its driving force - small-scale farmers. In 2016, the Malawian Government was still revising the official contract farming Strategy, which is a leading policy document for regulating contractual arrangements in Malawi for all agricultural produce. Thus, based on the research done in the paprika supply chain, this study is targeted at informing policy guidelines on how to improve contract farming so it can be implemented and enforced more efficiently, taking into consideration small-scale farmers' interests. In broader terms, the study outputs are applicable in cases of neighbouring countries that employ contract farming as one of the strategies for poverty alleviation. Lessons learned from Malawi can serve as the guideline in communication with key players and further in shaping strategies and policies for efficient and sustainable contracting.

The part of the study dealing with the contract design has an additional use. Since contracting principles in agri-food supply chains are similar (not the same), the study recommendations could be considered in a context of supply chain governance in national and international trade. Weaknesses in the design exposed in this study serve as an example to assist in avoiding contract traps in supply chains of both producers and contractors in developed and developing countries.

1.5 Research Problem and Main Assumption

Limited capital and assets hinder small-scale farmers in developing countries from investing in costly inputs and improved crop varieties, cultivating more suitable crops for high-value markets or meeting high-quality standards and consistency of supply (Minot and Roy, 2007; Swinnen and Maertens, 2007). Small-scale farmers often produce small quantities and poor quality crops. The lack of premium produce narrows the choice of market channels for small-scale farmers. In an extensive literature on modern supply chains, it is recognised that the exclusion from lucrative commodity markets might lead already poor small-scale farmers in developing countries into a deeper poverty trap, creating a vicious cycle for a few generations (Bijman *et al.*, 2007; Barrett, 2010; da Silva and Rankin, 2013).

This study builds on the already defined fundamental problem for Malawian small-scale farmers: the lack of linkages with markets.[4] Both theoretical and empirical literature suggests that contract farming can ensure the missing link and, by coordinating relations in supply chains, contribute to poverty alleviation and sustainable income generation for small-scale farmers (Key and Runsten, 1999; Eaton and Shepherd, 2001; Prowse, 2012). Nonetheless, poorly developed contracts could pose challenges to small-scale farmers in circumstances of unequal market power between the contractor and small-scale farmers. In the wider context of a research problem, this study focused on how to ensure efficient market participation for small-scale farmers to improve their livelihoods. The study addressed the problem of small-scale farmers' participation in high-value markets and, more specifically, analysed the relationship between the contracting company[5] and Malawian small-scale farmers.

1.6 Research Aim and Objectives

The aim of this study is *to explore, examine and address the key challenges in contract farming arrangements using the example of the paprika supply chain in Central Malawi*. The four objectives that guided the study are:

[4] The definition of the problem is based on studies from Agar and Chiligo (2008), the CYE report (2009) and Makoka *et al*. (2010). More detailed account of these studies is given in Chapter 6.

[5] Due to confidentiality, the name of the company used as a case study is not disclosed in this study. the Company's name is coded as 'Company D', and it is used throughout the study to mark the contracting company in Central Malawi that offered contracts for paprika to surveyed small-scale farmers.

- *Objective 1*: To explore and analyse current dynamics in Malawi's paprika supply chain.
- *Objective 2*: To identify factors that motivate small-scale farmers to enter into contractual relationships and explore how existing contracts influence small-scale farmers' livelihoods.
- *Objective 3*: To identify, describe and analyse the key challenges in the contractual relationship within the supply chain.
- *Objective 4*: To propose and critically evaluate options for improving contracting conditions, in particular for small-scale farmers.

1.7 Research Question and Sub-questions

The study defined one overall research question and a set of specific sub-questions in relation to the research objectives. The overall research question is: *How can contracting conditions*[6] *in Malawi be improved, especially for small-scale farmers, to facilitate more efficient and sustainable relations*[7] *in the existing paprika supply chain?*

The following specific sub-questions were related to stated objectives:

- *Sub-questions 1*: How do key players in the paprika supply chain interact among themselves regarding their roles, responsibilities and relations? What are the characteristics of contracted small-scale farmers? What is the level of small-scale

[6] In this study, *contracting conditions* are defined as internal and external conditions that affect contract farming. Internal conditions are primarily related to the contract itself and its design (what is contained in the contract clauses), which determines the relationship between the contractor and small-scale farmer. External conditions refer to the enabling environment surrounding the supply chain, in particular, the policies and support available from the Government, civil society, farmers' organisations, NGOs, research sector and aid organisations.

[7] The terms *efficiency* and *sustainability* are widely used in almost all scientific fields and can have many different meanings. In the light of the supply chain management, efficiency often refers to various models measuring how to improve the performance of all or some parts of the supply chain, especially logistics (e.g. Liang *et al*., 2006; Geunes *et al*., 2016; Perez Loaiza *et al*., 2017). The complex efficiency measurements, however, are not applicable in this study due to the nature of Malawi's paprika supply chain (e.g. no reliable data on suppliers' production and costs, uncertain delivery dates, no possibility to measure customers' satisfaction, etc.). In the context of this study, efficiency is explored through two main criteria: the inputs provided and delivered volumes of paprika. It is posited that efficient relationships in the supply chain will involve the timely provision of sufficient volume and quality of inputs to small-scale farmers, and agreed volumes of paprika delivered to the contractor with no or minimum side-selling. Sustainability in the supply chain management implies integrating '*environmental performance, social performance, and economic contribution*' into core business functions (Ansari and Kant, 2017, p. 2524). This study focuses on the practices of building a long-term relationship (through developing trust and paying a premium price) and enhancing communication (by information sharing and transparency). Thus, a sustainable relationship in the supply chain is built through the contract and entails high trust levels, satisfaction with the price received, transparent grading and bargaining.

farmers' involvement in farmers' organisations/unions and which factors influence small-scale farmers' membership?

- *Sub-questions 2*: What factors motivate small-scale farmers to enter contracts? How does contracting affect small-scale farmers' livelihood in terms of productivity, income generation and food security? Are small-scale farmers willing to expand their contracting to other crops and which factors influence small-scale farmers' willingness to expand?
- *Sub-questions 3*: What are the key challenges in Malawi's paprika supply chain? How do the structure and the content of the contract for paprika support efficient and sustainable relations? What is the level of side-selling in the paprika supply chain and which factors influence small-scale farmers' engagement in side-selling?
- *Sub-questions 4*: What changes or new practices need to be adopted for improved contracting conditions? How can the identified options for improving contracting conditions be implemented in the Malawian paprika supply chain? Which actors need to implement the identified options?

1.8 Overview of the Research Methodology

The choice of research methodology used for this study was influenced by the tradition of pragmatism and the belief that the combination of qualitative and quantitative data can provide appropriate evidence for proposing improvements in contracting arrangements. The study employed a mixed methods approach, which '*provides a better understanding of the problem than if [qualitative or quantitative] dataset had been used alone*' (Creswell and Plano Clark, 2007, p. 7). The embedded single case study, specifically the embedded design – multilevel model with both concurrent and sequential data collection and QUAL priority, was used (Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2009). The research included a total of 21 semi-structured stakeholders' interviews, 10 semi-structured interviews with experts, two focus group discussions with stakeholders, 428 household questionnaires and 10 focus group interviews with contracted small-scale farmers.

1.9 Study Outline

The study is organised into five parts (Figure 1.1). The first part consists of Chapter I and II. Chapter I introduces the research background, justification, objectives, questions and limitations, and positions the study in the context of existing knowledge. Chapter II presents the study's conceptual framework, synthesises the study's key concepts and links them with the theoretical framework that applies in the studied case.

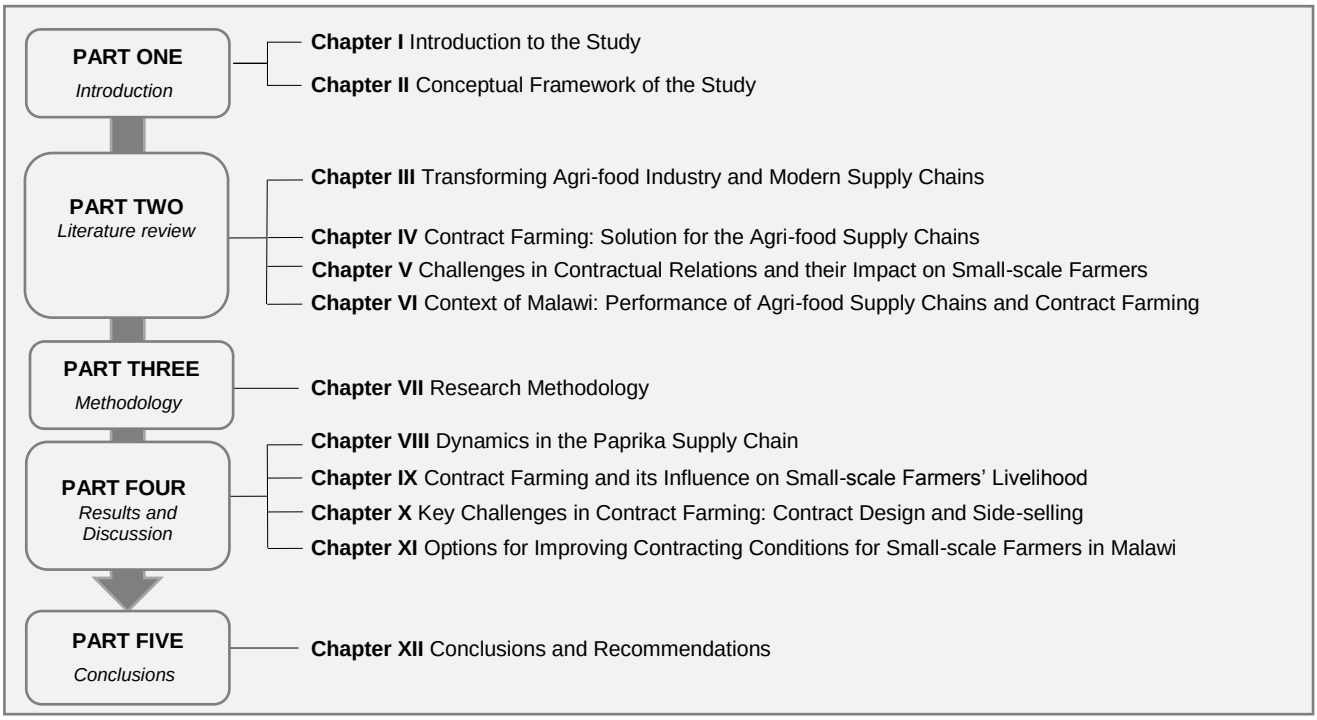


Figure 1.1 The outline of the study

The second part includes, in total, four chapters and represents the review of the relevant literature from which the study arose. Chapter III looks at the transformation of the food industry, outlines key features of modern food supply chains and assesses the position of small-scale farmers in new circumstances. Chapter IV first introduces contract farming and provides an overview of the positive features of contracting as well as empirical evidence supporting it. Chapter V focuses on challenges in contractual arrangements and draws lessons from highlighted examples where contracting failed. Chapter VI introduces the main characteristics of the Malawian context: the status of agriculture, the position of small-scale farmers, experiences with contract farming and the country's potential for further development.

The third part comprises of Chapter VII, which elaborates on the use of the mixed methods approach, describes the data collection, the analytical framework and limitations, and discusses the benefits of the used approach for the study outcomes.

The study results are divided into four chapters, which together comprise the fourth part of the study. Chapter VIII analyses different roles, responsibilities, and relations in Malawi's paprika supply chain. Chapter IX identifies primary motivational factors that guide small-scale farmers to enter into contracts and provides a detailed account on how contract farming influences small-scale farmers' livelihoods. Chapter X first elaborates on the key challenges identified in the paprika supply chain and then focuses closely on the contract design and the issue of side-selling. Chapter XI discusses the models for improving contracting conditions.

Chapter XII forms the fifth and concluding part of the study. It outlines key outcomes, draws conclusions and implications based on the studied example, recommends necessary steps for improved efficiency and sustainability of the paprika supply chain, and suggests the direction for further research.

1.10 Research Scope and Limitations

The study explores one paprika supply chain spread through two districts in Malawi. The study participants were supply chain players, contracted small-scale farmers, Company D providing contracts and the enabling environment. The enabling environment involved direct and indirect players both in Malawi and abroad (for example, experts are considered as indirect or distant parts of the enabling environment in this study). Supporting players in the supply chain, such as agro-dealers or transporters, were not included in the study. Since the primary focus of the research was a contract arrangement, the study did not explore other channels for marketing paprika, such as supermarkets or traditional spot markets in more detail, although their presence is deemed essential for small-scale farmers' linkages with the market.

The study did not consider differences between contract and non-contract farmers in the paprika supply chain, as many studies on contract farming have already done so. On the one hand, this choice is partly justified by the fact that the available time only

allowed for the cross-sectional study, while more objective and accurate results are yielded with longitudinal studies, especially panel studies, when it comes to comparing benefits from contract farming between two groups of farmers (Barrett *et al.*, 2012; da Silva and Rankin, 2013). On the other hand, the study used only the example of contracted farmers to link the specific contract design with relations that are evolving in a particular supply chain. With this concept, the study aspired to grasp more deeply the contract features that are more or less favourable.

The Malawian paprika supply chain was geographically scattered across three countries: production was carried out in Malawi, processing in South Africa and the most important customer was located in Germany. Due to time and resource constraints, the study followed the product flow in the chain up to South Africa, while characteristics of the final product and final customer were not captured. The methodological limitations are described in detail in Chapter 7.

1.11 Study Outputs

This study advances the understanding of complex relations in contractual arrangements and suggests options for improving contracting conditions for small-scale farmers in Malawi's paprika supply chain. The study's recommendations serve as an orientation to different stakeholders - from small-scale farmers to the Government level. To ensure visibility, the study outputs were communicated: (i) to the academic community through submitted scientific articles and conference contributions, and (ii) to stakeholders by disseminating the data on the field.

1.12 Summary

Chapter 1 introduced the study. The main characteristics of the study along with the justification were presented. The study seeks to examine how to improve contracting conditions for small-scale farmers in Malawi and provide more efficient and sustainable relations in the paprika supply chain. The next chapter introduces the study's conceptual framework and the related theoretical concepts underpinning the research.

Chapter 2 Conceptual Framework of the Study

2.1 Introduction

This chapter introduces the conceptual framework of the study. A study's conceptual framework consists of a set of concepts and related theoretical explanations derived from the critical literature review, which provides in-depth insights into the research topic and creates the basis for the research design. The first part of the chapter explains the importance of a conceptual and theoretical framework for guiding the research. The second part describes the elements of the study's conceptual framework. The last part of this chapter elaborates on two central concepts - supply chain and contract farming – and the underpinning theories.

2.1.1 Conceptual Framework

According to Meleis (2012), a concept is a label, which describes a phenomenon or a group of phenomena. A concept offers a summary of thoughts about the phenomenon and helps to summarise a great deal of details that surround a concept (Meleis, 2012). Savin-Baden and Howell Major (2013) offered a basis for understanding a theoretical and conceptual framework and how they can be utilised simultaneously in the study:

> '*Theoretical and conceptual frameworks may be used well together in a study. A researcher may, for example, draw key concepts from the literature that inform the choice of a phenomenon of study and selection of participants and then use a specific theory to guide data analysis*.' (p. 143)

This study used both theoretical and conceptual frameworks. The conceptual framework was adapted to represent the blueprint of the research. The study's conceptual framework integrated the main elements of the study design, relevant concepts and related theoretical considerations. In addition, the conceptual framework covered the choice of methodology. The analytical framework was also based on the relevant theory that guided the data analysis (see chapter 7, Section 7.6). The following sections provide more details on the study's integrated conceptual framework.

2.1.2 Application and Relevance of Theoretical Framework for the Study

There is a considerable difference in how theory is used in qualitative, quantitative, and mixed methods research. Creswell and Plano Clark (2007) and Teddlie and Tashakkori (2009) provided valuable insights on this (Table 2.1). In qualitative research, which is often close to the constructivist paradigm,[8] a researcher works with a 'bottom up' approach, meaning that the participants' views are taken to build broader themes and the theory is created by linking those themes (Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2009).

Table 2.1 The use of the theory in the case of three different paradigms

Elements	Constructivism	Postpositivism	Pragmatism
Ontology: ***What is the nature of reality*?**	Multiple realities (idealism): researcher uses quotes to point out different perspectives.	Singular reality (realism): researcher accepts or rejects hypotheses.	Singular and multiple realities: researcher tests hypotheses and points out different perspectives.
Epistemology: ***What is the relationship between the researcher and participant?***	The subjective point of view: reality is constructed together with participants.	The objective point of view: researcher objectively collects data on a phenomenon.	Both objective and subjective points of view, with practicality in mind: researcher collects data by 'what works' to address the research question.
Methodology: ***What is the process of research?***	Inductive: a researcher starts with participants' views and builds patterns, generalisations and theory.	Hypothetico-deductive: a researcher tests hypotheses to confirm or refute *a priori* theory.	Both inductive and hypothetico-deductive: a researcher collects both qualitative and quantitative data and integrates them.
Theory: ***How does the theory relate to the research?***	Theory building is an outcome of research.	The theory is a starting point for research and hypothesis-making.	The theory is needed to inform the quantitative part of research. Also, inductive-deductive research cycles are possible.

Source: Author's compilation based on Creswell and Plano Clark (2007), Teddlie and Tashakkori (2009) and Savin-Baden and Howell Major (2013).

[8] Thomas Kuhn (1996, p. x) defined paradigms as 'universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners'. Guba and Lincoln (1994, p. 105) described paradigms as the worldview (the term later adopted by Creswell and Plano Clark, 2007) or the system of beliefs that 'guides the investigator, not only in choices of method but in ontologically and epistemologically fundamental ways'.

In contrast to qualitative research, in quantitative research a researcher usually relies on postpositivist paradigm and applies a 'top down' approach, i.e. the primary concern is the theory that prompts a researcher to develop hypotheses and test the data against those hypotheses to confirm or refute the theory (Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2009). In mixed methods research, however, a researcher is likely to take pragmatism as a stance and employ both qualitative and quantitative methods to enable better understanding and solution to the studied problem (Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2009). Depending on the model used, the theory will play a role in mixed methods research by informing the quantitative side of the research (Teddlie and Tashakkori, 2009).

In this study, the theory played a significant role and its relevance was particularly reflected in informing the research design and interpreting the results. The theory was applied throughout the study as follows:

i. The direction of the study was influenced by the theory on philosophical stances, i.e. the most appropriate worldview considering the aim of the research. Since the study strived to suggest a solution to a problem, it was recognised that pragmatism and the related mixed methods approach[9] allowed collection of required evidence (both stories and numbers), which are needed in making recommendations for public policy.
ii. The concepts of supply chain and contract farming were used to frame the scope of the research, i.e. to inform the choice of study participants and understand their dynamics.
iii. A theoretical basis taken from Supply Chain Management, Contract Theory, Principal-Agent Game and New Institutional Economics accumulated assumptions about relations between parties and challenges in contract arrangements and thus prompted the formulation of the study aim and objectives.
iv. The same theoretical basis was later used as a guideline for the interpretation, discussion and comparison of results against the existing knowledge.

[9] The details on the mixed methods approach used in the study are described in Chapter 7 (Research Methodology).

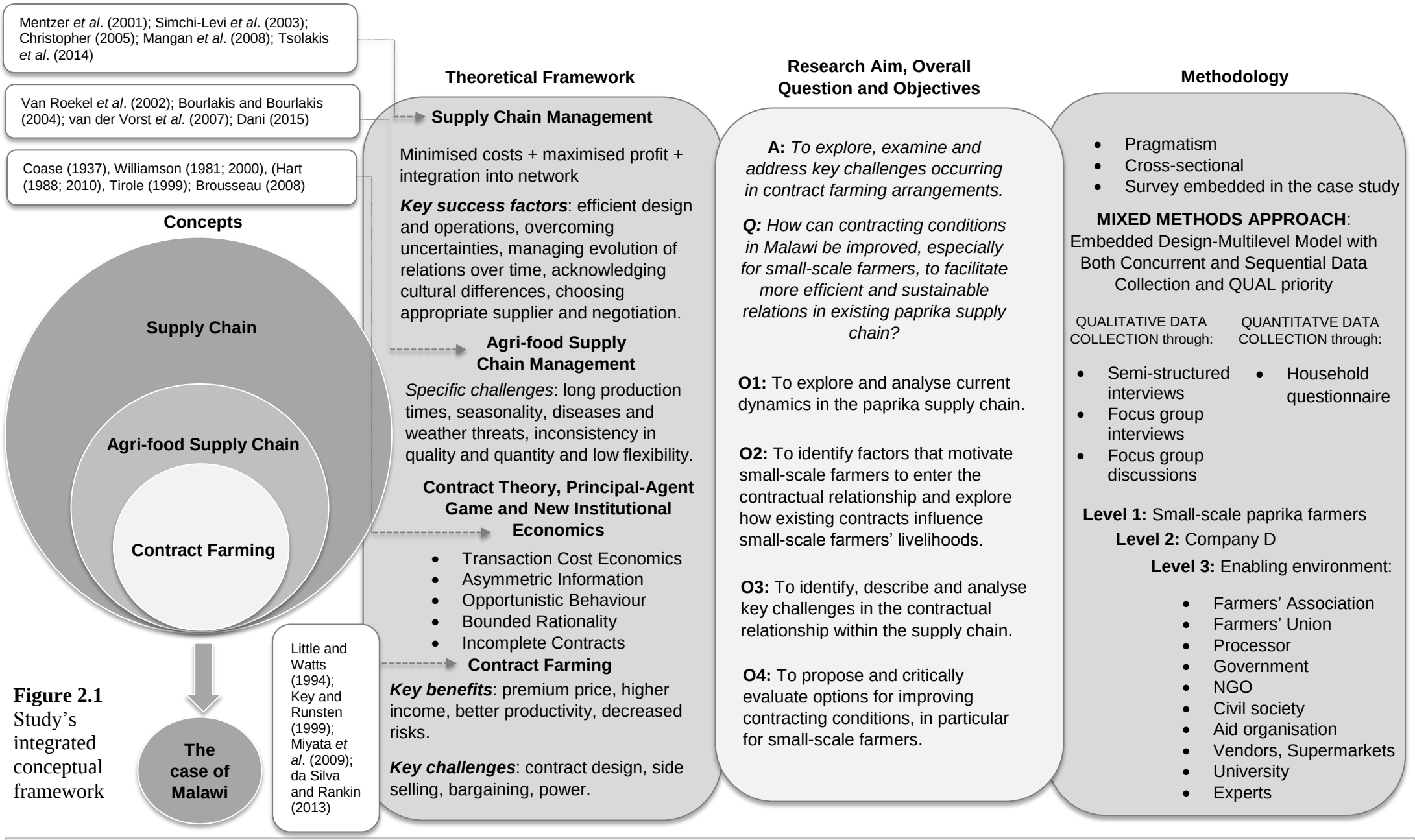


Figure 2.1 Study's integrated conceptual framework

2.2 Study's Conceptual Framework

2.2.1 Main Elements and their Sequence

The study's conceptual framework consists of five main elements: *Concepts*, *Theoretical Framework*, study design (*Research Aim*, *Overall Questions and Objectives*, and *Methodology*) and *Outcomes*. *Concepts* are the starting point of the research, the main idea, and the boundary of the study (Figure 2.1). *Concepts* are related to *Theoretical Framework. Theoretical Framework* provides an account of the existing critical knowledge about *Concepts*. *The Theoretical Framework* extends to inform *Research Aim, Overall Questions* and *Objectives* that represent the core of the study. To fulfil study *Objectives*, the *Methodology* outlines the approach and instruments used. Finally, *Outcomes* links all the elements and, based on the study's findings, synthesises the study's key contributions in academic and practical perspectives.

2.3 Overarching Concept: Supply Chain

The basic concept of a supply chain (SC) is the organisation of various flows between two ends. Although every supply chain is unique, a generic industrial supply chain will usually include: a supplier, manufacturer, warehouse, distribution unit, retail store, and final customer (Simchi-Levi *et al.* 2003; Mangan *et al.* 2008).[10]

A supply chain consists of numerous and dynamic processes and activities exchanged through upstream (supplier's end) and downstream (customer's end) linkages (Mangan *et al.*, 2008). The ultimate goal of every supply chain is to satisfy customer needs by providing the expected product or service in time and of appropriate quantity and quality, and to generate profit for the supply chain players (Chopra and Meindl, 2007).

Besides actual flows (i.e. information sharing), the transformation of the product,[11] and exchange of funds, supply chains also include a subtle part or so-called 'rules of the game'. The supply chains do not exist in a vacuum but are always embedded in the wider context of societies. Hence, these 'rules' facilitate flows in supply chains

[10] Since supply chains differ significantly, it is acceptable to state that a supply chain involves all parties directly or indirectly engaged in satisfying a customer's request (Chopra and Meindl, 2007).

[11] Throughout the supply chain, the initial product can go through one or a few phases of transformation, where physical form and value of the product are enhanced.

through various laws, policies, and regulations and are considered institutional elements, as suggested by da Silva and de Suoza Filho (2007). Also, support services, such as unions, associations, government, non-governmental organisations, regulatory bodies, and research and innovation units have a significant role in informing and implementing institutional elements (Tsolakis *et al.*, 2014). The institutional elements and support services together form a supply chain's enabling environment (da Silva and de Souza Filho, 2007).

2.3.1 Players and their Relations in the Supply Chain

The players in a supply chain are all individual or business entities that participate in producing the good or service and have an impact on the costs occurring as a result of activities in a supply chain (Simchi-Levi *et al.*, 2003). When analysing a particular supply chain, the scope sometimes has to be extended even to suppliers' suppliers and customers' customers because they also influence the supply chain performance (Simchi-Levi *et al.*, 2003; Christopher, 2005). Thus, there is a tendency to look at today's supply chains relations concerning players' integration rather than connections among isolating units performing independent activities (Christopher, 2005).

The literature suggests that the term ‘network’ best describes the organisation of the supply chain. For example, Christopher (2005) outlined the idea of a supply chain as a network with the company buying the goods at the centre and surrounded by suppliers and customers (Figure 2.2 where various colours represent different players in the supply chain).

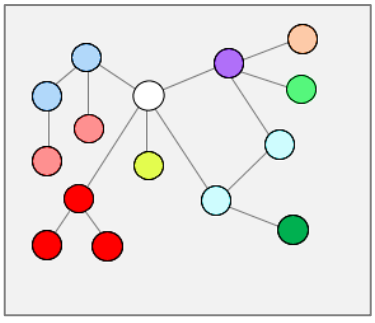


Figure 2.2 The idea of a supply chain as a network with nodes and links

Source: Adapted from Christopher (2005, p. 5).

Mangan *et al.* (2008, p. 11) argued that the supply chain involves *'multidimensional network of collaborating entities*' and by understanding supply chains as systems, the interaction among various entities becomes a focus of the supply chain analysis. In a supply network, different entities represent *nodes*, and their relations are depicted through *links* across the supply chain (Mangan *et al.*, 2008). Bourlakis and Bourlakis (2004) anticipated that supply chain players would continue to form networks in an attempt to increase their competitiveness on the global market. This assumption applies in particular to smaller producers. Due to the trend of fewer and larger firms operating in the food industry and the pressure for product and service consistency, smaller producers face a threat of being excluded from the market unless they can enter larger supply systems (Wysocki, 2000).

2.3.2 Supply Chain Management

The strategies on how to govern supply chains are the core of the Supply Chain Management (SCM) concept. SCM was introduced in the 1980s and, since then, it continuously develops to improve the efficiency of supply chains.[12] The importance of SCM for the firm cannot be overemphasised, because, in some industries, SCM is '*perhaps the single most important factor determining the success of the firm*' (Simchi-Levi *et al.*, 2003, p. 7).

As noted by Mentzer *et al.* (2001), SCM can be viewed as: (i) an operational term involving the flow of products and materials, (ii) a management philosophy or (iii) a management process. Storey *et al.* (2006) saw SCM as a tool that influenced players' behaviour in a particular direction. Dani (2015) argued that two basic principles of SCM are to satisfy consumers' requirements and to guide the supply chain to become and remain economically sustainable. Simchi-Levi *et al.* (2003) described SCM as a set of approaches that aim to integrate all supply chain players efficiently to produce and distribute products and services in the right quantities, time and locations. Moreover, Simchi-Levi *et al.* (2003) emphasised that the goal of SCM is to minimise the costs along the supply chain and satisfy customers' requirements. Similarly, Mangan *et al.* (2008) viewed SCM as the management process that

[12] The evolution of SCM encompasses several phases, and in-depth elaboration is beyond the scope of this study. However, it is important to emphasise that SCM developed from logistics background and extended the logistics by linking it with manufacturing, information technology, marketing, sales, and strategic planning (Sweeney, 2007).

coordinates upstream and downstream entities and related flows. The authors pointed out that SCM has the purpose of creating value in the form of products and services (Mangan *et al.*, 2008). Chopra and Meindl (2007) stated that the task of SCM is to maximise that overall value generated. Christopher (2005) integrated the two ideas by stating that the primary objective of SCM is to deliver superior value to the customer at lower costs for all supply chain players. Also, the author highlighted the importance of managing the relationship among players and recognised potential pitfalls coming from different interests across the supply chain:

> '*The focus of supply chain management is on co-operation and trust and the recognition that, properly managed, the "whole can be greater than the sum of its parts". Thus the focus of supply chain management is upon the management of relationships to achieve a more profitable outcome for all parties in the chain. This brings with it some significant challenges since there may be occasions when the narrow self-interest of one party has to be subsumed for the benefit of the chain as a whole.'* (Christopher, 2005, p. 5)

Christopher's idea of putting effort into the management of relationships to enable more efficient and sustainable supply chains is the guiding thought adopted in this study.

2.3.3 Agricultural Food Supply Chain Management

The agricultural food (agri-food) supply chains generally share a similar conceptual background as the industrial supply chains, so the Agricultural Supply Chain Management (ASCM) targets the same objectives as SCM.[13] The ASCM manages the flow of the product 'from farm to fork'. Due to the peculiarity of agricultural production, agri-food supply chains face additional challenges compared to the industrial ones. According to van Roekel *et al.* (2002), van der Vorst *et al.* (2007) and Tsolakis *et al.* (2014), agri-food supply chains may experience challenges due to:

- Long production times - production of a new or additional product is time-consuming,

[13] This statement has to be considered in broad terms, especially because suggested comparison of agricultural and industrial supply chains may take several directions, depending on the examples taken. However, what is similar in both supply chains is the flow of information, materials, and funds, and the goal to integrate all players in the supply chain to achieve highest profits and lower costs. ASCM was recognised and adopted in the agri-food industry only in the last decade (Tsolakis *et al.*, 2014).

- Seasonality - some agricultural commodities cannot be supplied all year-round because of climatic conditions,
- Disease and extreme weather threats such as pest attacks, floods and droughts,
- Inconsistencies in quality and quantity as the lack of inputs can limit yields and decrease crop quality,
- Low flexibility (e.g. lack of capital to upgrade production).

With some exceptions, agri-food supply chains tend to be more vulnerable concerning changing trends and distortions in international markets compared to non-food supply chains. Van der Vorst *et al.* (2007) distinguished and described two main types of agri-food supply chains: (a) chains for fresh agricultural products and (b) chains for processed food (Figure 2.3.). In the case of fresh agricultural products, the raw material (e.g. the vegetable, flowers or fruit) maintains its initial characteristics and the core supply chain activities involve farming (including cultivation, harvesting and post-harvest handling), storing, packaging, transporting, and trading. For processed food, the raw material is used to produce consumer products that have higher added value (e.g. canned food, juice or spices); thus, the supply chain activities also include processing.

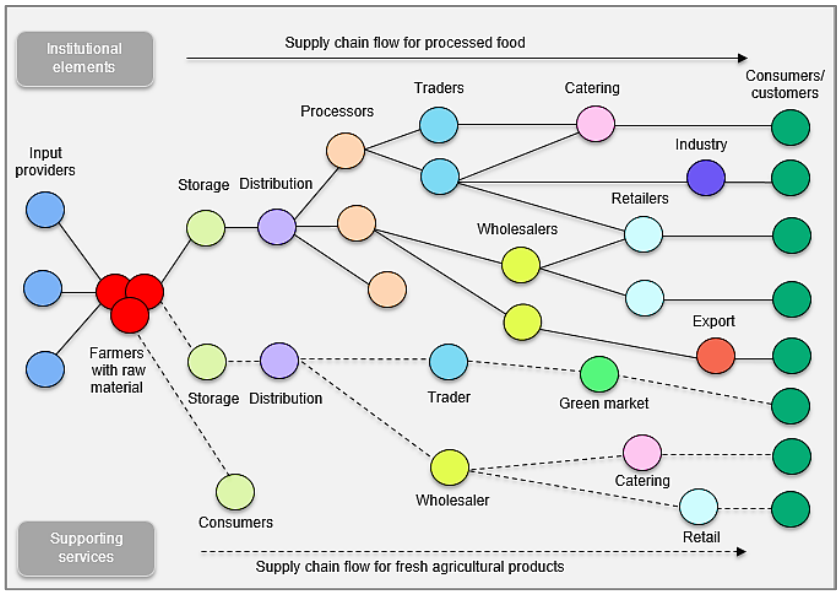


Figure 2.3 The agri-food supply chain for fresh and processed agricultural products

Source: Based on Bourlakis and Weightman (2004), da Silva and de Suoza Filho (2007), van der Vorst (2007), Tsolakis *et al.* (2014) and Dani (2015).

Considering that agricultural products might be used in various forms (fresh, semi-processed or ultra-processed), the role of ASCM is also to determine the optimal purpose and marketing channel for the agricultural product (e.g. whether the commodity should be a material for export or green market). Indeed, management of modern agri-food supply chains is becoming a complex and challenging task (Tsolakis *et al.*, 2016). Due to scarce resources, rising world population, and increased requirements regarding the food quality and safety, the importance of ASCM will grow in the coming years.

2.4 Central Concept: Contract Farming

Some of the key tasks of SCM include minimising costs and increasing control over uncertainties, thus parts of a supply chain can be regulated through futures contracts. Futures contracts can have many forms and they differ in their content; however, they usually define quantities, qualities, delivery time, and prices for the product supplied (Simchi-Levi *et al.*, 2003). The parties agree on the price of a product in the present, while the delivery and the payment for the product take place at a future time agreed. In futures contracts, the contractor speculates on the increase or decrease of the future price and hedges the risk by signing a contract with the supplier (Dani, 2015). Contract farming is founded on the principle of futures contracts.

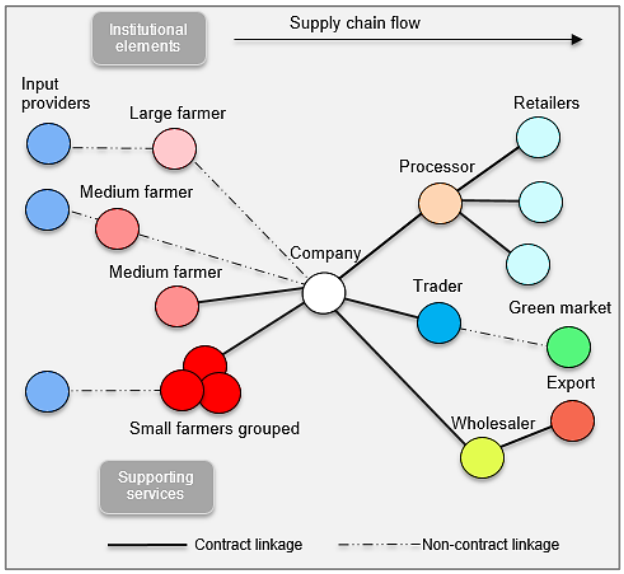


Figure 2.4 Supply chain with indicated contracted and non-contracted relations

Note: A company represents a mediator between primary producers and the rest of the supply chain. Source: Author's adaptation of the literature.

One of the primary functions of the contract is to mitigate imperfections on the input and output markets and to secure a regular supply of the produce (da Silva, 2005). Figure 2.4 shows that contracts can be made at different stages of the supply chain. Contract farming refers to the relationship between an agricultural producer and subsequent player(s) in the chain organised through the contract. Contract arrangements define responsibilities of the party that cultivates and sells the product and the party that buys the product. The following sub-headings bring more details on relevant theories underpinning contracting.

2.4.1 Contract Theory and Principal-Agent Game as the Foundation of Contract Farming

Contract theory is based on the assumption that parties can arrange their relations efficiently through contracts (Hart, 2010). The law of contract regulates transactions between suppliers and buyers of goods and services (Brownsword, 2009). However, contract theory does not imply a single thought that can be expressed about the nature of the contracts; rather it is a collection of ideas and methods that fit various situations (Bolton and Dewatripont, 2005). Also, contract theory relies on the field of law and economics (Hart, 2010). For example, when referring to contract theory, Salanié (2005) noted that this theory has a number of models, which vary depending on whether the unit of analysis involves complete or incomplete contracts, or bilateral or multilateral relationships. This study explores the nature of bilateral contracts found in agri-food supply chains, so the theory further focuses on this particular relationship and its characteristics.

There are several necessary requirements regarding contract arrangements. To be legally enforceable, the contract must contain an offer, acceptance, and consideration (Massey *et al.*, 2009). In agri-food supply contracts, one party usually obliges itself to support farmers' production and to buy the crop (offer). The other party, by accepting the offer, commits itself to deliver the determined quantity and quality of the crop (Bijman, 2008). The inputs and money exchanged for the crop represent considerations in the case of a contract involving a crop. Additionally, contracts distribute value, uncertainty and decision rights between the parties (Sykuta and Parcell, 2002).

Contractual relationships are often explained through the Principal-Agent Game theory. Based on this theory, the principal (a company) proposes the contract and defines the terms of the contract by anticipating how the agent (a small-scale farmer) will answer each strategy proposed, that is, the agent will either accept or reject the contract in the proposed form (Key and Runsten, 1999, Salanié, 2005, Vavra, 2009). Key and Runsten (1999) further explained that the principal maximises its profits if (i) the agent accepts the contract as the contract gives greater profit than the next best option (e.g. selling the product on the green market) and (ii) the agent complies with the contract terms. In an attempt to motivate the agent to act on behalf of, and for the benefit of the principal, the principal must outline the contract that secures appropriate incentives, which will exceed any alternative and make the agent complete the principal's requirements (Kirsten *et al.*, 2009; Vavra, 2009). Various scenarios in the contractual relationship between the principal and agent are further considered and described under the New Institutional Economics (NIE) framework in the following sections.

2.4.2 New Institutional Economics and Contract Farming

Extending the neoclassical theory, NIE has emerged in the early 1970s and is rooted in the work of Ronald Coase, Oliver Williamson and Douglass North[14] (Rutherford, 2001; Foss and Klein, 2008). The central concepts of NIE are institutions and institutional arrangements. Institutions are defined as a critical factor influencing the economic performance and governance tools that have the role to reduce transaction costs (Joskow, 1985; North, 1991, 1993; Kherallah and Kirsten, 2001; Kirsten *et al.*, 2009).

Contract farming in developing countries is often explained using the NIE theoretical framework (Key and Runsten, 1999; Kirsten and Sartorius, 2002; Cook *et al.*, 2008; Kirsten *et al.*, 2009; Jia and Bijman, 2013). In NIE tradition, contracts are regarded as institutional arrangements that facilitate cooperation among parties, reduce transaction costs and mitigate specific market failures, such as expensive inputs, lack of credit, and information asymmetry (Key and Runsten, 1999; Kherallah and

[14] The early works that shaped NIE include: Roland Coase (1937) 'The Nature of the Firm', *Economica* 4(16), pp. 386-405; Oliver Williamson (1975) *Markets and Hierarchies: Analysis and Antitrust Implications - A Study in the Economics of Internal Organization*, New York: The Free Press; and Douglass North (1991) 'Institutions', *Journal of Economic Perspectives* 5(1), pp. 97-112.

Kirsten, 2001; Brousseau, 2008). Brousseau (2008) argued that NIE revived the contract as a central object of economic investigation. For the purpose of this study, NIE elements considered include transaction cost economics, asymmetric information, opportunistic behaviour, bounded rationality and contractual incompleteness.[15] Although NIE perspective offers a solid foundation to explore contract farming, critics pointed out that this paradigm does not address issues of trust, fairness, power and idiosyncrasies of contracting (Kirsten *et al.*, 2009; Jia and Bijman, 2013). Still, NIE represents the most comprehensive framework for this study's aim.

2.4.2.1 Transaction Cost Economics

The key assumption of Transaction Cost Economics (TCE) is that every transaction between economic actors involves so-called transaction costs, which should be considered as the '*costs of running the economic system*' and therefore distinguished from the '*usual production costs*' (Coase, 1937; Arow, 1969, p. 2; Williamson, 1985, p. 18; Jia and Bijman, 2013). In the case of contracts, transaction costs are costs that occur *ex-ante* during: (i) searching for agents, (ii) screening of agents, (iii) writing the contract, (iv) negotiating, (v) signing the contract, (vi) transferring goods and services, and *ex post* while: (vii) monitoring contract compliance, (viii), enforcing contracts, and (ix) breaching the contract (Joskow, 1985; Williamson, 1985; Key and Runsten, 1999; Rehber, 2007; Brousseau, 2008; Vavra, 2009; Jia and Bijman, 2013). Companies always seek to minimise their transaction costs. For example, if it is more expensive to supply the raw material from the market, the company will try either to vertically integrate into production of that raw material or employ contractual arrangements to lower the total transaction costs over time (Joskow, 1985; Rehber, 2007).[16] Considering contract farming, if the company decides to contract with fewer but larger farmers, some transaction costs (such as costs of setting and monitoring contracts) might be decreased (Key and Runsten,

[15] It is beyond the scope of this chapter to include a detailed account of the NIE framework, thus, sections focus on elements that are relevant to understand better contracting and provide theoretical foundation for interpreting the study's results.

[16] Joskow (1985) distinguished between three basic options of governance structures in the case of vertical relationships. At one extreme is vertical integration. At the other extreme are auction markets. In between these governing structures is a broad range of contractual agreements. More details on this topic are contained in Chapter 4 of this study.

1999; Vavra, 2009). However, contracting with larger farmers leads to excluding vulnerable small-scale farmers from markets.

2.4.2.2 Asymmetric Information

In economic relations, the assumption is that two parties do not have access to the same information; therefore, the distribution of resources throughout the economy is likely to differ compared to the situation where both parties have all the necessary information (Grossman, 1981; Vavra, 2009). In other words, because of asymmetric information, parties have different knowledge on the circumstances of another party and decisions that take place regarding any transaction are influenced by the amount of information available to each party. Being aware of asymmetric information is of high significance to understand relations in contract farming. Just like in Spence's (1973) seminal example of an employer hiring an employee, the company that drafts the contract will not have complete information on the capabilities (production capacities and skills level) of each small-scale farmer that signs the contract. Hence, during the initial phase of the contract, the company will mainly depend on *signalling*, that is, small-scale farmer's self-representation.[17] Similarly, the small-scale farmer is not likely to have the information on a company's financial status or long-term strategic plans before signing the contract (or in the course of a contractual relationship) and will have to rely on the company's *signals*. Therefore, since the information is asymmetrically distributed between parties, the transaction is often subject to hazards and opportunistic behaviour (Williamson, 1975).

2.4.2.3 Opportunistic Behaviour

Opportunistic behaviour represents a threat to the contract efficiency. Opportunism reflects in dishonest behaviour when one or both parties shirk or disguise the actual conditions related to the contract performance (Williamson, 1981, 2000; Sykuta and Parcell, 2002). Examples of opportunistic acts in the case of contracting include: (i) using received credit intended for inputs to buy other materials or not buying anything at all, (ii) loan default, (iii) low selling prices offered by the company, (iv)

[17] Spence (1973) explained signalling using an example of a job market. The author argued that when hiring an employee, the employer does not have the information on the quality of an employee's work; hence, the decision on hiring is made under uncertain conditions. Given that the employer cannot directly observe the employee's capabilities, the decision on hiring will be based on observable personal attributes, such as education and previous experience (information provided by the employee).

tampering scales, and (v) selling poor quality inputs (Dorward *et al.*, 2004; Dries *et al.*, 2014).

Opportunism also refers to strategic manipulation with information and actions. Two most frequent expressions of opportunistic behaviour include adverse selection (*ex-ante* opportunism) and moral hazard (*ex-post* opportunism) (Williamson, 1985). Adverse selection occurs when the principal has imperfect information about the agent, and the agent takes advantage of the asymmetry by misrepresenting the true state of the world (Williamson, 1985; Vavra, 2009). Applying Salanié's (2005) example[18] of an adverse selection situation to the contract farming context, the company faces adverse selection by offering input provision through the contract while not having complete information on the farmer's land size or loan repayment history. The farmer may withhold the true information on the actual size of the land to acquire more inputs and gain profit by selling the surpluses. Also, the farmer could disguise information on unpaid loans from previous business activities. In an adverse selection situation, the principal must try to make an agent reveal the correct information and one of the ways is to propose different types of contracts assuming that the agent's choice will reveal the information on the agent (Salanié, 2005; Vavra, 2009). It is costly to monitor and obtain complete information about every agent, especially in contract farming arrangements where the company contracts with hundreds of scattered farmers.

Moral hazard is likely to occur whenever the objectives of involved parties differ and the principal is not able to control the agent's actions (Salanié, 2005; Vavra, 2009). In the case of contract farming, companies might aim to obtain a certain amount of raw material while small-scale farmers desire to receive a premium price for the crop. Since the company is not able to observe and influence all small-scale farmers' actions, it is likely that small-scale farmers will choose to act to optimise their gains through side-selling the crop outside the contract for a higher price. To avoid moral hazard, companies often tie small-scale farmer's remuneration to the observable variable, (e.g. delivered quantity of the crop) and motivate small-scale farmers to

[18] Salanié (2005) provided an example of an adverse selection situation. The government-regulated company has better information on its internal productivity and costs compared to the regulator; thus, the company is in a position to manipulate disclosure of the information to the regulator and maximise own profits.

choose actions that are better aligned with the companies' objectives (Salanié, 2005; Vavra, 2009). Both asymmetric information and opportunism are likely to increase transaction costs.

2.4.2.4 Bounded Rationality

For a while, one of the well-accepted assumptions in neoclassical economics was that economic actors possess extended rationality that helps them to accurately evaluate the state of the world and act rationally to resolve problems (Foss and Klein, 2008; Vavra, 2009). According to NIE tradition, the human mind is subject to cognitive limitations, which results in bounded rationality (Williamson, 2000, 1981). This fact is important for analysing contract design. Because principals, as contract-drafters, are limited in their rationality and cannot deal with the complexity of all contractual aspects, contracts will not include all the information needed and are usually considered incomplete (Williamson, 1981; Anderlini and Felli, 1994; Hart and Moore, 1999; Tirole, 1999; Sykuta and Parcell, 2002; Brousseau, 2008; Wu, 2013).

2.4.2.5 Incomplete Contracts

Incompleteness in contracts occurs mostly due to *ex-ante* and *ex-post* transaction costs related to drafting and enforcing contracts, asymmetric information, and parties' bounded rationality (Hart, 1988; Williamson, 1998; Hart and Moore, 1999, 2006; Maskin, 2002; Katz, 2005; Brousseau, 2008; Kirsten *et al.*, 2009; Grandori, 2010; Saenger *et al.*, 2012). The incomplete contract does not contain all the necessary information and does not describe all possible present and future 'states of the world' or parties' rights and responsibilities in contingencies (Tirole, 1999; Maskin, 2002; Shavell, 2003; Sykuta and Parcell, 2003; Rehber, 2007; Prowse, 2012). According to Hart (2010), the reason for leaving a contract incomplete might be to take advantage of the agent's cognitive limitations. Besides, Gow *et al.* (2000), Katz (2005) and Codron *et al.* (2013) stated that incompleteness might be a strategic move to allow *ex-post* negotiation and give more flexibility in the case of external (market) disruptions. In cases when parties know that the contract will be renegotiated, parties might decide to ignore incentives in the initial contract and act according to the incentives expected in a renegotiated contract (Bogetoft and Ballebye Olesen, 2002).

2.5 Alternative Approaches to the Theoretical Framework

Contract farming is a multifaceted phenomenon, and it stretches over several different disciplines, especially agronomy, economics and law, development, and sociology. Except for exploring contract farming from a Supply Chain Management perspective and NIE paradigm, there are other relevant approaches applicable. This section introduces two such approaches: the Sustainable Livelihood Framework (SLF) and Value Chain Analysis (VCA). Contract farming arrangements can be considered, for example, from the lens of the Sustainable Livelihood Framework. The SLF is a tool that helps to improve understanding of the livelihoods of the poor and it is used to assess the contribution of different economic activities to livelihood sustainability (Department for International Development - DFID, 1999). The aim of SLF is to assist in alleviating poverty and highlight the opportunities available to support the poor's livelihoods through identification of (i) factors that affect livelihoods, (ii) the relative importance of those factors, and (iii) the way factors interact (DFID, 1999). Although contract farming represents an opportunity to alleviate poverty and improve small-scale farmers' livelihoods, the SLF does not provide explanation or guidelines for complex relations between contracting parties. Moreover, the SLF consists of numerous elements, and the application of the SLF is more appropriate for long-term studies or projects compared to cross-sectional research. The SLF might be efficient in a single country context; however, translating the findings into widely applicable knowledge could be challenging. In particular, the SLF focuses on the vulnerability context and different forms of capital (human, natural, financial, social, and physical), which are important but are a marginal part of this study. Therefore, the SLF was not employed.

The supply chain concept is often compared to the value chain (VC) concept. The boundaries between supply chains and value chains are still not clear in the literature, mostly because the two have the same unit of analysis. Applying value chain analysis (VCA) was considered for this study. Both SC analysis and VC analysis explore flows among different players across the chain. However, the purpose of the VCA is to disaggregate a company into strategically relevant activities and understand the cost structure, which is a foundation for a company's competitive advantage (Porter, 1985). Porter (1985) also added that a company could gain a competitive advantage by performing activities in the chain more efficiently

than its competitors perform. Moving away from the company-focused view, the VCA looks at the transformation of the raw material by recording and analysing the value that each player adds to the product. Dani (2015) suggested that players along the value chain intend to increase their returns through the addition of value. Kaplinsky and Morris (2000) highlighted the importance of VCA for new poor agricultural producers entering the market to secure income generation. Nonetheless, the choice of SC or VC analysis is influenced by the research circumstances. For example, this study explored the flow of a crop intended for export. In Malawi's case, value addition was only possible after the raw material already progressed from small-scale farmers to the buyer, and even to the processor (second buyer) because of the required export procedure.[19] This study focused on small-scale farmers, the first buyer, and how to improve their relations. Further stages of the chain were not considered in much detail. Besides, main participants in the study were small-scale farmers with limited assets and skills to add significant value to the product. The research circumstances paired with the study's aim encouraged the use of SCA rather than VCA.

2.6 Summary

The second chapter presented the conceptual framework that guided the research and focused on the first two elements of the framework. The study's conceptual framework consists of five inter-related elements: *Concepts* (Supply Chain and Contract Farming), *Theoretical Framework* (Supply Chain Management, Contract Theory, Principal-Agent Game and New Institutional Economics), *Research Aim, Overall Question and Objectives*, *Methodology* and *Outcomes*. The following four chapters outline a review of the relevant literature underpinning the study.

[19] For export purposes, buyers usually require a quality raw material with, as much as possible, uniform characteristics, so the differentiation or value addition from the producers' side is not applicable.

PART TWO: LITERATURE REVIEW

Chapter 3 Transforming the Agri-food Industry and Modern Supply Chains

3.1 Introduction

This chapter describes the phenomena leading the transformation of the agri-food industry over the last five decades and outlines key characteristics of modern supply chains. After determining the key success factors for agri-food supply chains, the chapter examines the position of farmers in developing countries within a modern agri-food industry. The last section discusses whether small-scale farmers can follow the rules and succeed in the transformed agri-food industry.

3.2 Transformation of the Agri-food Industry and its Main Determinants

The world's agri-food industry is undergoing a significant transformation spurred by market liberalisation, globalisation, climate change, fast-changing trends and scarce resources (Hubeau *et al.*, 2017). This transformation especially reflects in the way that food is produced, processed and traded. For instance, Shepherd (2007) observed that farmers are no longer producing without having an idea when, where, to whom or at what price they will sell their produce and whether the market will be able to absorb the produced quantities. Rather, the coordination between farmers and processors, retailers and other players in supply chains has increased, encouraging farmers to specialise their production and target consumers' requirements (Reardon *et al.*, 2009; Lee *et al.*, 2012). The agri-food industry has become more concentrated by switching from independent markets towards more tightly aligned and controlled food supply chains (Vavra, 2009).

The evolution of this new agri-food industry is intertwined with several different factors. First, technological progress has advanced agricultural and processing sectors, resulting in higher yields and more secure and long-lasting foods. Da Silva (2005) and McCullough *et al.* (2008) argued that the transformation process was a result of developments in information and communication technologies; innovations in transport; improved crop and animal genetics; better post-harvest management; increased importance of nutrition; and implementation of biotechnology. Second, agricultural production patterns had to change due to increased global food demand.

Vavra (2009) and Tonts and Siddique (2011) highlighted the occurrence of the decrease in agricultural diversity and ‘farms' consolidation', meaning that the average number of farms globally decreased while, at the same time, farms grew in size, productivity and specialisation.

Second, the input supply industries, which used to supply inputs to the agricultural sector as by-products of other industrial sectors, experienced increased concentration and introduced the era of companies such as Monsanto and DuPont who supply advanced seeds and further influence trends in the global food industry (Coleman *et al.*, 2004; Chen and Stamoulis, 2008). Third, regarding management of the agri-food industry, Kherallah and Kirsten (2001) emphasised that intensified competition among global food supply chain players, challenges in size and scope of production and distribution, overall risk mitigation and strategic positioning of food companies prompted the need for new organisational structures to guide the agri-food industry. Furthermore, there are many more diverse factors simultaneously influencing transformation. However, the following sub-section considers more carefully market liberalisation and globalisation and the shift in consumers' demands as the central and overarching determinants of the transformed agri-food industry.

3.2.1 Market Liberalisation and Globalisation in the 1908s and 1990s

At their simplest, market liberalisation and globalisation can be understood as processes in which the world breaks its economic, cultural and political walls and becomes closer. In particular, market liberalisation is characterised by the reduction or removal of trade barriers and protective policies between countries and regions with an aim to create more open and global production, processing and trading mechanisms (Figure 3.1) (Coleman *et al.*, 2004; Mangan *et al.*, 2008). Dornbusch (1998, p. 217) argued that liberalisation creates ‘*a more economically rational market structure*' since free trade encourages the transfer of know-how and helps to break oligopoly and inherited inefficiencies of narrow markets in protected economies. In addition, Stiglitz (2002) suggested that opening up to international trade gave an opportunity to numerous countries to achieve faster growth, especially in cases where a country's exports fuels its economic progress. Market liberalisation induced the mobility of capital flows and affected the organisation and performance of the agri-food industry - companies expanded their operations internationally

while, at the same time, global markets became more integrated (da Silva, 2005). The competition among different, and now also global, supply chain players increased and caused structural changes in agri-food supply chains (Weatherspoon *et al.*, 2001; Swinnen and Maertens, 2007; Chopra and Meindl, 2007).

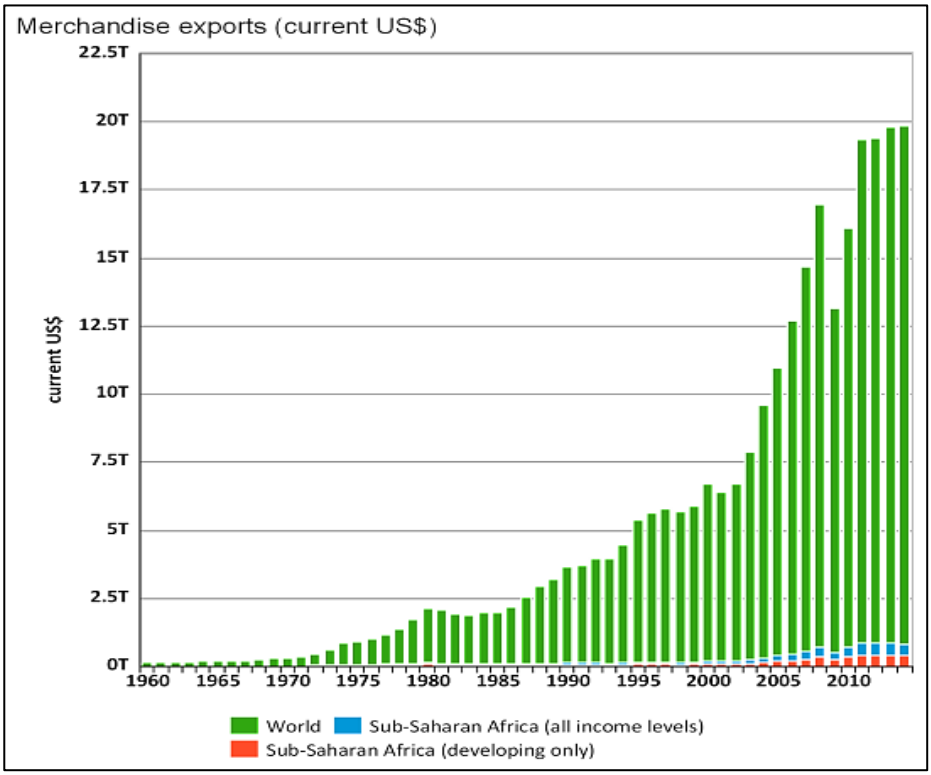


Figure 3.1 The increase of merchandised export in world and Sub-Saharan Africa: 1960-2013.

Source: Author's compilation based on World Bank (2015).

One of the consequences of market liberalisation is the phenomenon of overseas facilities and suppliers as, due to increased international trade, companies had to expand their producing and supplying networks to meet growing needs of the population (Mangan *et al.*, 2008). In developing countries, market liberalisation reduced the state's control over food chains, encouraged the inflow of foreign direct investment (FDI) and expanded trade links between consumers in the developed world and farmers in the developing countries (Swinnen and Maertens, 2007; Bijman, 2008; Chen and Stamoulis, 2008). Market liberalisation provoked both scepticism and high expectations regarding the growth of developing economies, and the evidence of the market liberalisation effect has been mixed so far (Greenaway *et*

al., 2002). For instance, market liberalisation encouraged export; however, primary producers and consumers in developing countries faced highly volatile commodity prices, which posed serious threats to their livelihoods (Deaton and Miller, 1995; Dehn, 2000; Combes and Guillaumont, 2002). Stabilisation policies, including domestic market insulation, seem to fail in ensuring protection in the case of price volatility. Instead, they are costly, robust, and might even deepen poverty and food insecurity of poor nations (Moledina *et al.*, 2004; Gouel and Jean, 2012; Anderson *et al.*, 2013; Gouel, 2013).

Nonetheless, market liberalisation opened the door to international interconnectedness and increased movement of ideas, technology, culture, economy (goods, services, capital and labour) and policy (Bende-Nabende, 2002; Hirst and Thompson, 2003). Globalisation has many definitions, but it can be considered as a set of processes that widen, deepen and speed up worldwide connections, transform social relations and transactions, and generate interregional flows and interactions (Held *et al.*, 1999; McCullough *et al.*, 2008). Perhaps the most vivid description of globalisation is the one where '*local happenings are influenced by events occurring many miles away and vice versa*' (Bende-Nabende, 2002, p. 7). Starting from the 1970s, globalisation still continues in 2010s (Perraton, 2003; Reardon *et al.*, 2009).

For the agri-food industry and its transformation, economic and cultural aspects of globalisation matter, as suggested by Coleman *et al.* (2004). The production of agricultural products now entails global linkages with numerous suppliers, processors and retailers, and the trade of agricultural commodities and processed food has increased. On the other hand, Coleman *et al.* (2004) brought forward the importance of cultural influences when it comes to food preferences, as choices regarding what food to eat and how to prepare it are often integrated into the culture of communities. Indeed, globalisation spurred the exchange of cultural identities and features beyond geographical borders and tightened the global community, which reflects in dietary patterns, too, and explains an increasing consumption of American-style convenience foods worldwide (McCullough *et al.*, 2008).

Aside from the benefits in the form of prosperity, globalisation also involves some threats, particularly in developing countries. Stiglitz (2002; 2006) summarised the

positive side of globalisation by stating that this on-going process has the potential to: (i) eliminate the sense of economic and cultural isolation present in many developing countries; and (ii) raise living standards through enabling access to knowledge, lucrative markets, and income generation and savings for the poor. Nevertheless, the critique of globalisation is rather serious as:

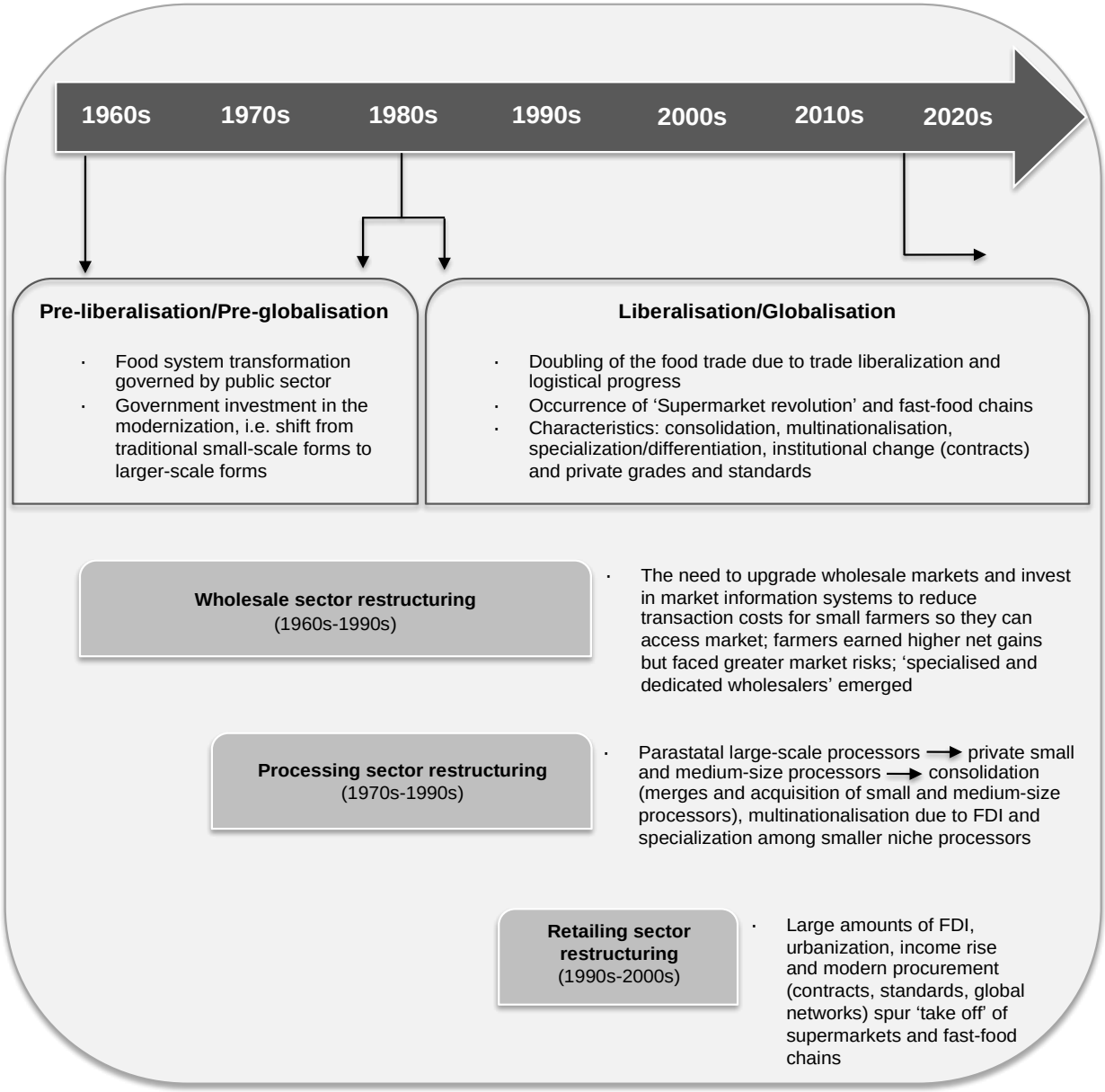
> *'…the problem is not with globalization itself but in the way globalization has been managed. Economics has been driving globalization, especially through the lowering of communication and transportation costs. But politics shaped it. The rules of the game have been largely set by the advanced industrial countries – and particularly by special interests within those countries – and, not surprisingly, they have shaped globalization to further their own interests. They have not sought to create a fair set of rules, let alone a set of rules that would promote the well-being of those in the poorest countries of the world'* (Stiglitz, 2006, p. 4).

It is hard not to notice the point the author is making - globalisation has not been tailored for everyone equally; nevertheless, in the end, almost like Smith's *invisible hand* (Smith, 2007), it secures the progress for the whole world. Hazell *et al.* (2007) and Mangan *et al.* (2008) argued that globalisation increases risks and might exploit the poor as a consequence of the tireless race for new markets. Ultimately, Timmer (2009) raised the question whether non-globalisation of some countries is the result of their external exclusion from the trade and technology flows, or internal shortcomings of effective policies and governance. The answer to this question is yet to be found.

The dynamics of the agri-food transformation stimulated by liberalisation and globalisation in developing countries are more closely depicted in Figure 3.2. According to Reardon *et al.* (2009), the transformation occurred in two related phases: (1) preliberalisation/pre-globalisation from the 1960s until the mid-1980s, and (2) liberalisation/globalisation from the mid-1980s onwards. The transformation can be further broken into the restructuring of three relevant segments: (i) wholesale, (ii) processing and (iii) retailing. The pre-liberalisation/pre-globalisation phase was marked by the transformation of the food system led by the public sector and government's investment in farm consolidation. In the wholesale sector, the changes involved investment in upgrading wholesale markets and developing market information systems to enable small-scale farmers' access to markets. In the

processing sector, large-scale parastatal processors were transformed into small- and medium-scale processors. During this first phase, the retailing sector did not experience major developments. Market liberalisation/globalisation phase brought increased food trade and introduced supermarkets and fast-food chains to the developing world.

Figure 3.2 Process of liberalisation and globalisation



Source: Adopted from Reardon *et al*. (2009).

In the wholesale sector, so-called specialised and dedicated wholesalers[20] emerged, while small-scale farmers started to gain greater income but faced market risks.

In the processing sector, small and medium processors went through consolidation as the multinational companies started to enter developing countries due to increased foreign direct investment (FDI). The rise of supermarkets attracted considerable attention from the academic and development community (for example, Boselie *et al.*, 2003; Reardon *et al.*, 2003; Weatherspoon and Reardon, 2003; Reardon *et al.*, 2004; Traill, 2006; Minten and Reardon, 2008; Reardon and Gulati, 2008; Abrahams, 2010; Reardon *et al.*, 2012), which (cautiously) advocated utilising a new market channel to help small-scale farmers fight their poverty. Following changes in the food retailing, procurement needed to modernise through contracts, private standards and global supply chains to support the growing food demand (Reardon *et al.*, 2009).

3.2.2 Shift in Consumers' Demand

Market liberalisation and globalisation made it possible for the world to stand together. On the other hand - shifting patterns in global demand now circulate much faster and require a quicker response, and thus significantly shape the modern agri-food industry. Apart from the previously mentioned globalisation and population rise, the most important factors contributing to changes in consumers' demand globally are urbanisation and growing *per capita* income (Reardon and Barrett, 2000; Birthal *et al.*, 2005; Will, 2013). Urbanisation is especially noticeable in developing countries as the increasing population regularly settles in cities and towns and transforms traditional consumption patterns: (i) urban consumers buy the majority of their food compared to rural consumers who prefer to grow it and (ii) the choice of available food is much wider in urban than in rural areas (Minot and Roy, 2007). Urban consumers usually have higher wages and are ready to pay more for convenient foods (McCullough *et al.*, 2008; Montgomery, 2009). According to the Engel's Law, there is '*a negative relationship between size of income and the*

[20] Reardon *et al.* (2009) described terms 'specialised wholesaler' as the wholesaler who specialises in one product category and 'dedicated wholesaler' as the wholesaler who is devoted to meeting the needs of the modern food industry clients and sources the materials from farmers and processors usually through vertical coordination to ensure appropriate supply. Often the 'specialised and dedicated wholesaler' will be supplied by the preferred medium or large-scale supplier due to matters of supply consistency (Minot and Roy, 2007; Tschirley, 2007).

proportion of expenditures for food',[21] meaning that growing incomes will increase the absolute expenses for food (the dollars spend will increase) but the relative expenses (the percentage of the budget allocated for food) will decrease (Zimmerman, 1932, p. 101; Loeb, 1955, as stated in Vaile *et al.*, 1952, p. 96-97).

So, what kind of food is preferred today in the globalised society? The high-value, processed and food outside of a home is the preference of modern consumers. Staple foods (such as grains and pulses) have been rapidly replaced with high-value agricultural products including milk, eggs, meat, fruits and vegetables, fish and horticultural products (Reardon and Barrett, 2000; Birthal *et al.*, 2005; Minot and Roy, 2007; Shepherd, 2007; Bijman, 2008; Gómez *et al*., 2011). In addition, there is a growing demand globally for processed food that can be conveniently prepared, for example, frozen, pre-cut, pre-cooked and ready-to-eat food (da Silva, 2005; Ramaswami *et al.*, 2006; McCullough *et al.*, 2008). Reardon and Barrett (2000), Minot and Roy (2007) and McCullough *et al.* (2008) argued that the popularity of processed food could be attributed to two main factors. First, consumers require such food that will spare their time. The processed food is often less perishable, which decreases shopping frequency, and it is quick to prepare. Second, the rise in full-time employment of women is expected to induce the demand for processed and food outside of home (e.g. restaurant food) as the traditional breadmakers increasingly become breadwinners[22] and spend longer hours at their workplace.

Modern consumers are also more aware of the non-tangible characteristics of food, thus, they demand more information on environmental conservation, certification (e.g. organic or fair trade), status of farm workers, animal welfare and social/ethical responsibility related to the food (da Silva, 2005; Vavra, 2009; Gómez *et al.*, 2011; Groenewald *et al.*, 2012). Consumers' sensitivity to quality and safety issues has direct consequences for supply chain players. In particular, farmers are encouraged to regularly supply commodities that adhere to stringent safety and quality grades and standards (Kherallah and Kirsten, 2001; Swinnen and Maertens, 2007; da Silva

[21] This interpretation of much-debated Engel's Law comes from Zimmerman (1932), who repeatedly warned that Engel's Law has its limitations and should not be applied out of its context.
[22] Breadwinner denotes a common term for a person in the household who is earning money (position often attributed to males) while the breadmaker marks the person preparing the food for the family (position often attributed to females).

and Rankin, 2013). Uniformity and standardisation of agricultural products according to consumers' taste is becoming a practice in the new agri-food industry (Simmons, 2002; Reardon and Gulati, 2008). Finally, to produce and deliver the desired food today, processes from ‘farm to fork' are becoming more complex and stretch to: (i) new post-harvest management techniques to extend the shelf life of perishable foods, (ii) innovative packing techniques and (iii) refrigerated transportation (Dixon *et al.*, 2001; Kirsten and Sartorius, 2002).

3.3 Modern Agri-food Supply Chains

As shown, the transformed agri-food industry abounds with fast-growing international linkages, strict regulations and increased competition among market players, which makes it challenging to succeed, especially as a small-scale farmer. In these conditions, modern agri-supply chains must overcome market inefficiencies, decrease costs and secure profits for its participants. Adding the UN's initiative through Sustainable Development Goals to involve small-scale farmers in global supply chains, the structure and governance of modern agri-food supply chains becomes a rather complex and onerous task.

3.3.1 Characteristics of Modern Agri-food Supply Chains

An overarching trend in modern agri-food supply chains involves closer coordination among production, processing, transporting and trading units (Chen and Stamoulis, 2008; McCullough *et al.*, 2008; Kühne *et al.*, 2015; Jonkman *et al.*, 2017). Tighter relations lead to increasingly integrated and concentrated supply chains with a few large retailers and supermarkets and multinational corporations dominating the food sector (Peterson, 2002; Maertens *et al.*, 2012). The transformation especially favoured the retail sector, which is becoming the most powerful global stakeholder (Chen, 2006; Lee *et al.*, 2012). Reardon and Gulati (2008, p. 36) argued that, in today’s ‘*demand-driven, consumer-dominated transformation*’, organised retailing occupies a large market share, which affects the majority of stakeholders in supply chains. Stakeholders who receive benefits from growing retailing power are likely to support the transformation while others are either resisting the change or adapting their operations to minimise losses (Reardon and Gulati, 2008).

Retailers are gaining prominence in developing countries as well (Hazell *et al.* 2010). The so-called ‘supermarket revolution' in developing economies started in the 1990s and had been spreading in eastern and southern parts of Africa in the late 1990s and early 2000s (Reardon and Gulati, 2008). The main trigger for the emerging supermarket sector was the increased flow of FDI in developing countries due to globalisation and market liberalisation (Weatherspoon and Reardon, 2003). Weatherspoon and Reardon (2003) and Reardon and Gulati (2008) further described how supermarkets usually enter the market in developing countries:

(1) Better off first: Supermarkets are first established in largest and richest African countries and afterwards (supported by FDI) in smaller and poorer ones.
(2) From urban to rural: Supermarkets start in large cities, then spread to intermediate cities and towns, and then reach small towns in rural areas.
(3) Profitability as a priority: In the early stages, the primary target for supermarkets is the upper-income class that offers the highest profit for invested capital. Thus, supermarkets are often considered as a luxury niche in a developing country context. In the next phases, supermarkets will move to the middle class and in the end, enter the market for the urban poor.
(4) From processed to fresh: In newly established areas, supermarkets will first offer processed foods. The second wave of product penetration involves semi-processed foods. In the final stage, supermarkets will introduce fresh foods, such as leafy and bulk vegetables.
(5) Small-scale farmers as the last suppliers in the row: Regarding the supply of products, supermarkets search for medium- to large-scale producers in the country and prefer those already organised in associations who supply both the export and local markets. If such farmers are not available and small-scale farmers find it difficult to meet quality and quantity standards, supermarkets will rely on imports. Supermarkets will supply products from small-scale farmers if there is an opportunity to establish projects that can help small-scale farmers to upgrade their production and satisfy supermarkets’ criteria. In addition, Reardon *et al.* (2009) noted that companies would source materials from small-scale farmers if they dominate in the agrarian structure of the country and if farmers have access to non-land assets, such as farm equipment, irrigation and paved roads.

Supermarkets, processors and other traders prefer to have a smaller supply base but with predominantly large-scale farmers and fewer intermediaries to cut transaction costs (Allison, 2004; Echánove and Steffen, 2005; Hazell *et al.*, 2010; Lee *et al.*, 2012). Swinnen and Maertens (2007) added, however, that companies might diversify their supply and include medium- and small-scale farmers to avoid over-reliance on a few larger suppliers.

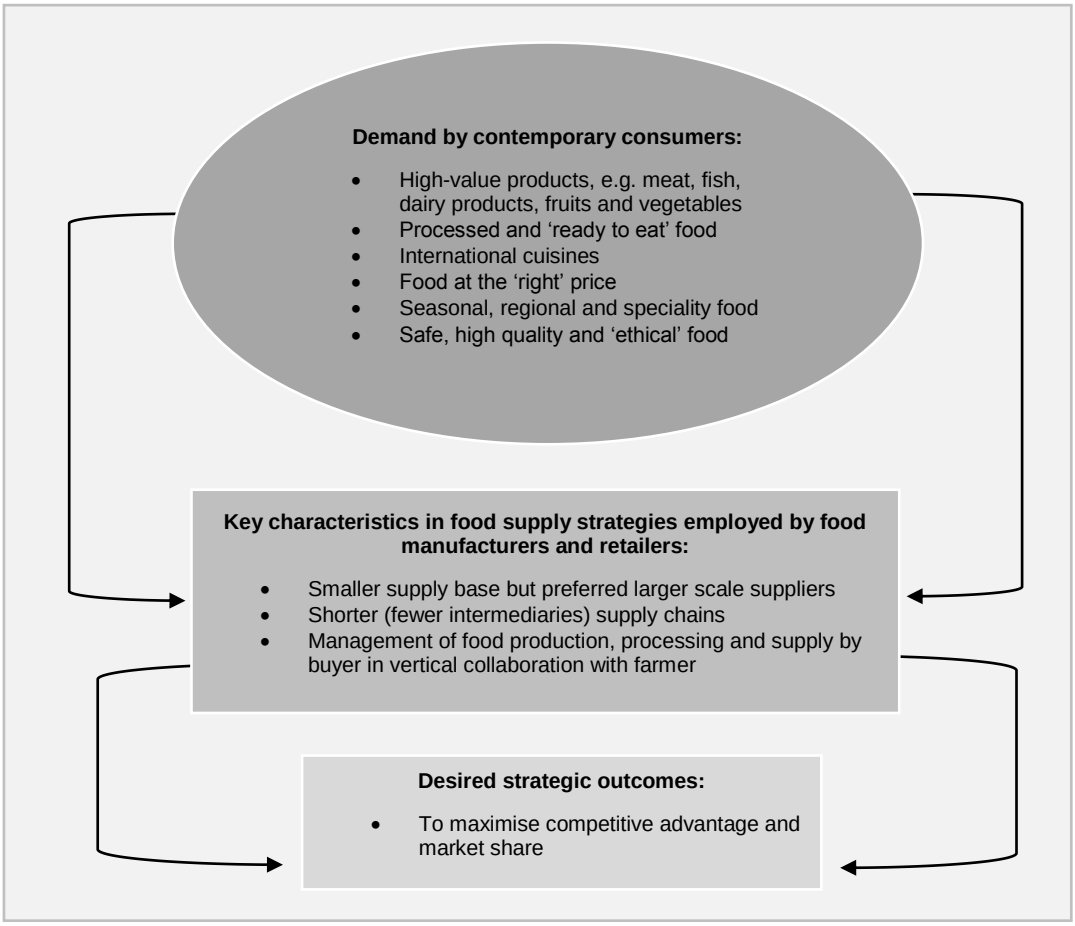


Figure 3.3 Key characteristics of modern agri-food supply chains

Source: Based on Allison (2004, p. 52).

Another characteristic of modern agri-food supply chains is the increased competitive pressure for all players (da Silva and Rankin, 2013). The companies are competing on the open global market with numerous competitors that offer similar products; thus, achieving a competitive advantage through chains' integration, business alliances, reduced costs, delivered high-quality services and added value products is becoming increasingly important for survival (Figure 3.3) (van Roekel *et al.*, 2002; da Silva, 2005; Lee *et al.*, 2012).

The current dynamics of the agri-food industry transformation encouraged the emergence of dualistic systems, which is particularly visible in developing countries. For instance, alongside supermarkets, traditional food systems (such as local green markets) still prevail in developing economies and represent the most important channel for purchasing food for the majority of the population (FAO, 2013). Furthermore, apart from supplying the national market, modern agri-food chains also introduced high-value export markets and made them accessible for capable producers (Maertens *et al.*, 2012). Nevertheless, varying capabilities of local producers deepen the gap between industrialised large-scale farmers and subsistence small-scale farmers and cause divisions in the agrarian structure of developing countries (Reardon *et al.*, 2009; Lee *et al.*, 2012).

Small-scale farmers are today faced with four main types of agri-food chains, as described by Lee *et al.* (2012). A *buyer-driven chain* is not supportive towards small-scale farmers since it is relatively short, involves few intermediaries, i.e. large importers or exporters and imposes high safety and quality standards. Fresh fruits and vegetables are often supplied through buyer-driven chains. A *producer-driven chain* is suitable for small-scale farmers since it imposes less strict standards, a processor usually operates in the middle of a chain, and particular attention is given to crop quality. Thus, the production process is highly controlled, and small-scale farmers do not have much choice in using varieties and fertilisers. Small-scale farmers are also limited in achieving higher gains as the processor takes the larger share of benefits. Processed tomatoes and organic coffee and cocoa are often supplied through producer-driven chains.

Lee *et al*. (2012) further suggested that, in *bilateral oligopolies*[23], small-scale farmers are incorporated as out-growers and rely on resources and an outlet provided by the company. The relation between the company and small-scale farmers is tight as parties mutually depend on each other. Participation requires investments on the small-scale farmers' side to comply with required standards. This type of supply chain often involves contract farming and plantations. Finally, *traditional markets*

[23] Bilateral oligopoly is defined as '*a situation where there are few buyers and sellers of a given product in a market. The level of concentration in the sale and purchase of the product results in a mutual inter-dependence between sellers and buyers*' (OECD, 2013, p.17).

serve as a buffer zone for small-scale farmers that do not meet safety and quality requirements for the local fresh produce intended for export. The requirements are only a few and exchange is made on the field with instant cash payment. In summary, the literature suggests that modern agri-food supply chains are globally oriented, increasingly integrated and competitive, with high standards and entry barriers, and led by the retailing sector, which prefers the small base of larger suppliers.

3.3.2 Key Success Factors in Managing Modern Agri-food Supply Chains

Considering that modern supply chains operate under a wide array of conditions, the ASCM must overcome challenges related to the nature of supply chains. Of particular importance to this study are the following key success factors in ASCM defined by Wood *et al.* (1995), Simchi-Levi *et al.* (2003), Chen (2006), Chopra and Meindl (2007), van der Vorst *et al.* (2007) and Fernie and Sparks (2014):

(1) Efficient design and operation: It is challenging to develop and operate a supply chain where costs are minimised, and the quality of product or service is maintained at a high level, especially if the supply chain involves several different entities. On the other side, supply chain design and operation decisions have a significant impact on the success or failure of a company. ASCM aims at designing supply chains that have ultimately clear benefits for all players and rely on solid communication, information sharing, trust, respect and minimising costs in its operations.

(2) Overcoming uncertainties: Every supply chain faces numerous difficulties. The most obvious one is the uncertainty about the demand for a product or service and, despite advanced forecasting techniques, it is unlikely that the precise demand for a particular item will be predicted. Other related uncertainties involve delays in delivery, component availability,[24] price volatility, and natural disasters, such as earthquakes, floods or droughts. The role of ASCM is to design a supply chain that will eliminate as many uncertainties as possible and deal effectively with the remaining uncertainties.

[24] In the case of agricultural production, the component availability may refer to the supply of appropriate quality and quantity of inputs.

(3) Appropriate dealing with the evolution of relations over time: Supply chains are dynamic, and relations among players are likely to alter over time. This is due to the changing character of customers' demand and suppliers' capabilities. The ASCM has to direct players to act towards achieving what is optimal for general mutual interest of the supply chain.

(4) Acknowledging cultural differences: In an international supply chain, the importance of potential cultural differences should not be neglected. In particular, if the same (or similar) beliefs, values and customs are not shared among players, this might affect the efficiency and outcomes of the supply chain. Therefore, managing an international supply chain should involve acknowledging differences based on cultural heritage and adjusting operations to be acceptable to all players yet efficient for the overall supply chain goal.

(5) Choosing an appropriate supplier: Especially in smaller and shorter supply chains, suppliers will have a great impact on company performance. The selection of a supplier will mostly depend on two main factors. First, whether a supplier has the skills and capacities to provide promised materials or services. This consideration is of high importance in cases where a supplier is providing critical materials or services, and it is challenging to replace that supplier. Second, the cost structure of a supplier will also play a role in suppliers' selection. It is known that part of the costs arises from a supplier's characteristics, i.e. how a supplier organises its processes, and the rest of the costs are the result of market factors, such as raw materials and labour costs. Hence, successful managing of agri-food supply chains involves a choice of a supplier that will reflect a balance between suppliers' abilities to deliver and accompanying costs.

(6) Negotiation: Setting the rules and conditions among players in a supply chain is necessary. Often, this will be reached through a negotiation process. The key to an efficient negotiation is to achieve a win-win situation, which is also an aim of ASCM. Since a supply chain is an integrated network, players mutually depend on each other's activities. If the players negotiate on a single dimension, e.g. the price, it is not possible to reach a win-win outcome as one party wins at the other party's

expense, which is a characteristic of a zero-sum game.[25] Accordingly, the negotiation should include multiple issues, e.g. the quality, delivery time, and volumes, which gives more opportunity to satisfy different preferences and accomplish the win-win result. In this case, for example, a supplier might be willing to decrease its price slightly if a company allows for a more flexible delivery time.

3.3.3 A Way Forward Towards Vertical Integration

Traditional spot markets are efficient in the case of numerous small buyers and sellers, homogeneous goods and perfect information (Minot, 1986). However, modern agri-food supply chains have rapidly shifted from spot markets to more tightly connected governance forms of vertical integration (Kirsten and Sartorius, 2002; Peterson, 2002; Minot and Roy, 2007; Shepherd, 2007; Vermeulen and Cotula, 2010; Fréguin-Gresh and Anseeuw, 2013). Some examples of vertical integration include franchising, strategic alliances, acquisitions, contract farming, joint ventures and full vertical integration (Young and Hobbs, 2002; da Silva, 2005; Maertens *et al.*, 2012). Vertical integration involves establishing strong vertical linkages among input suppliers, farmers, processing units and agribusiness companies with an aim to increase the control over the product from the production stage until it reaches the final consumer (Warning and Key, 2002; Coleman *et al.*, 2004; FAO, 2013; Jia and Bijman, 2013). Control is crucial for achieving quality and safety standards, consistent supply and addressing market inefficiencies (Groenewald *et al.*, 2012; Dries *et al.*, 2014). Also, new forms of vertical integration are initiated by private companies and are not state-controlled (Swinnen and Maertens, 2007).

Figure 3.4 depicts spot markets, contract farming and full vertical integration in relation to the degree of a producer's/buyer's control of production and marketing processes and the level of uncertainty in price, quality and outlet. Producers have a much higher level of control on spot markets compared to full vertical integration; however, uncertainties are highest on spot markets (Kelley, 1995; Vavra, 2009). Contract farming is located between two extreme governance forms and thus implies

[25] A zero-sum game is a part of the game theory. It describes a situation where two or more players engage in a business activity, and one person's gain is equivalent to the other person's loss; therefore, the net change in wealth or overall benefit created is zero (Fudenberg and Tirole, 1991, p. 4).

moderate control over production and marketing processed by the farmer and substantial security in price, quality and outlet for the commodity (Key and Runsten, 1999; Fréguin-Gresh *et al.*, 2012).

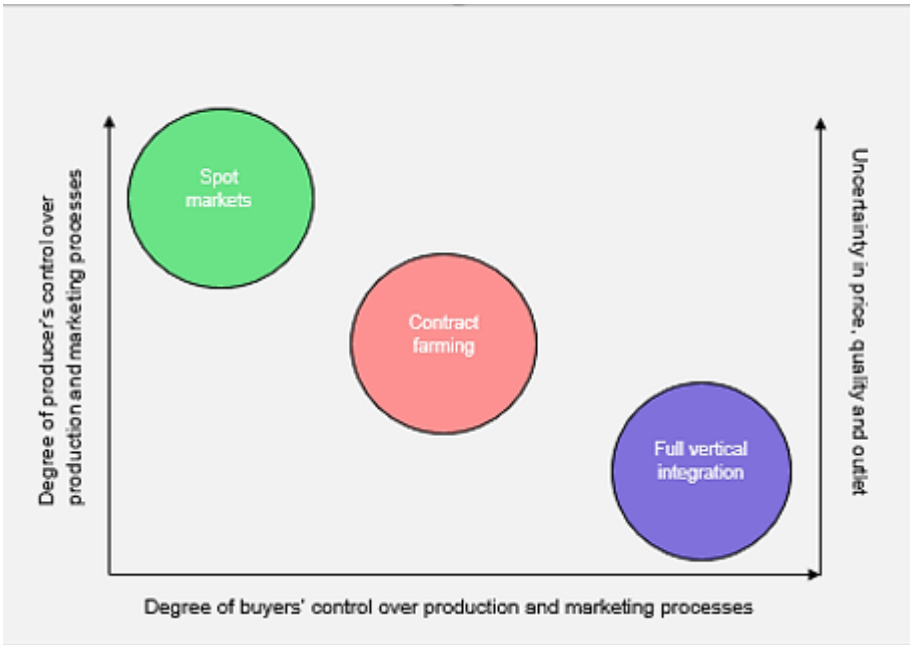


Figure 3.4 Positioning of contract farming as a market governance structure

Source: Author's visual based on the literature review.

3.4 Small-scale Farmers in Modern Agri-food Supply Chains

The importance of the small-scale sector for developing countries is significant. In Sub-Saharan Africa, small-scale farmers represent the majority of the rural population[26], have a crucial role in a country's economic development but also show high levels of poverty (Bijman *et al.*, 2007). It is deemed necessary to consider the position of small-scale farmers within modern agri-food supply chains due to the impact that this transformed industry has on farm households. The core question is whether small-scale farmers can benefit and how risks and rewards are distributed in modern supply chains (Coleman *et al.*, 2004; McCullough *et al.*, 2008). The essential pre-requisites for small-scale farmers to participate in internationalised markets are an investment in assets and diversification into high-value commodities (Tonts and Siddique, 2011; Hazell and Rahman, 2014). Still, the allocation of risks and rewards will mainly depend on the market power of players involved in the supply chain.

[26] Hazell and Rahman (2014) estimated that there are around 450 million small-scale farmers spread in developing countries.

Small-scale farmers in developing countries are usually defined according to several factors: the size of the land, labour and income expenditure. Although there are no official criteria regarding the size of the land that makes someone a small-scale farmer, the literature suggests some parameters. Minot (2011) considers farmers with 3-5 hectares or less as small-scale farmers. Conway (2014) and Livingston *et al.* (2014) suggested that the small-scale farmer has two or fewer hectares of land. Regarding labour, small-scale farmers primarily rely on unpaid family labour (Baumann, 2000; Bijman *et al.*, 2007; Hazell *et al.*, 2010). Small-scale farmers tend to spend earned income locally and thus stimulate the rural non-farm economy (Wiggins *et al.*, 2010). Another characteristic is related to small-scale farmers: they aim at improving the income and food security of their households while preserving their independence as owners of farm enterprise (Glover and Kusterer, 1990). The following two sections summarise the main opportunities and challenges for small-scale farmers in modern agri-food supply chains.

3.4.1 Opportunities for Small-scale Farmers

The greatest advantage of small-scale farmers lies in their land and labour use. Small-scale farmers employ labour-intensive methods that can increase land productivity with less capital investment compared to larger farms (Swinnen and Maertens, 2007; Singh, 2011; Hazell and Rahman, 2014; Lee *et al.*, 2014). Small-scale farmers have access to cheap and abundant family labour, which is self-supervising and often more dedicated and motivated than hired labour (Key and Runsten, 1999; Prowse, 2012; Will, 2013). Stated advantages reduce transaction costs, which represents the main reason why agribusiness companies want to engage with small-scale farmers.

Once integrated into the supply chain, small-scale farmers might increase their income and mitigate poverty (Birthal *et al.*, 2007; McCullough and Pingali, 2008; Reardon *et al.*, 2009). Dixon *et al.* (2001) suggested that even if some small-scale farmers cannot efficiently reach criteria to be included in the market, they could still benefit as more progressive farmers might employ the poorer ones during activities such as land preparation, harvesting, packaging and transport. Moreover, participating small-scale farmers may increase productivity due to open access to inputs, credits and technology (Singh, 2003; Reardon and Gulati, 2008; Vorley *et al.*,

2008; Barrett *et al.*, 2012). Offered opportunities make modern agri-food supply chains attractive to small-scale farmers since they can address inherited pitfalls (e.g. lack of inputs) and ensure progress from subsistence to more commercialised farming. Nevertheless, there are certain obstacles on that road.

3.4.2 Obstacles for Small-scale Farmers

Despite the fact that small-scale farmers use their land and labour more efficiently, as mentioned - agribusiness companies are keener to source raw materials from larger farmers. Thus, small-scale farmers can quickly become marginalised and excluded from modern supply chains (Eaton and Shepherd, 2001; Swinnen and Maertens, 2007; Bijman, 2008; Barrett *et al.*, 2012; Groenewald *et al.*, 2012). Access to technology might not be only an opportunity for small-scale farmers. Technology adoption often requires additional costly investments, technical knowledge and entails high risks of failure in early stages, all of which small-scale farmers cannot afford (Baumann, 2000; Hazell *et al.*, 2007; Minot and Roy, 2007; Barrett, 2010; da Silva and Rankin, 2013). Moreover, Kirsten and Sartorius (2002) and Ramaswami *et al.* (2006) noticed that nowadays small-scale farmers have to produce according to consumers' demand yet farmers are too remote to track and adapt their production to changing preferences efficiently.

Small-scale farmers often lack access to suitable land and related facilities, such as irrigation, roads, ports and greenhouses needed for efficient production and exchange (Bijman *et al.*, 2007; Louw *et al.*, 2008; Reardon *et al.*, 2009; Barrett, 2010). Also, small-scale farmers' ability to participate in high-value markets is often limited by the great geographical distance from trading zones (Shepherd, 2007; Barrett *et al.*, 2012). High safety and quality standards and continuous supply are one of the major constraints that keep most small-scale farmers away from modern markets (Kherallah and Kirsten, 2001; Weatherspoon and Reardon, 2003; Tschirley, 2007; Birthal, 2008; Louw *et al.*, 2008; Reardon and Gulati, 2008; Hazell *et al.*, 2010; Lee *et al.*, 2012). In particular, high-value export markets are sensitive to chemicals and demand strict control of their application. Small-scale farmers in developing countries tend to use cheap but unacceptable types and quantities of pesticides, which makes the product inappropriate for the market (Key and Runsten, 1999; Dinham, 2003).

Lack of financial stability and restricted access to needed credit is another obstacle that small-scale farmers face (McCullough *et al.*, 2008; Sautier *et al.*, 2008; Sharma, 2008; Minot, 2011; Kunte *et al.*, 2014). Regarding market power and information, small-scale farmers are mainly in a weak position, too. If included in modern supply chains, small-scale farmers are likely to be overpowered by large players (e.g. processors, retailers, exporters and even large commercial farmers from developed countries), meaning that the distribution of revenues will not be in favour of small-scale farmers (Harl, 2000; Dixon *et al.*, 2001). Also, small-scale farmers often do not have accurate and timely information on market prices, production methods for new varieties, risk levels and possible legal protection, which lowers their bargaining power (Dinham, 2003; Vermeulen and Cotula, 2010; Minot, 2011).

3.4.3 Survival in Modern Agri-Food Supply Chains

Hazell *et al.* (2007, p. v) questioned whether '*small farms have a future in the developing world*', which alludes to the challenging position of small-scale farmers in modern supply chains and their role in the agricultural and economic development of vulnerable economies. Vermeulen and Cotula (2010) noted that some streams suggest consolidation of smaller farms into few large estates to gain economy of scale and increase mechanisation. On the other hand, Wiggins *et al.* (2010) argued that small farm development is desirable and feasible for efficient poverty reduction. McCullough *et al.* (2008) added that the joint objective for developing countries should be to facilitate the transition of small-scale farmers, rather than to eliminate this sector. Furthermore, Dorward and Kydd (2002) concluded that small-scale farmers are actually 'locked in' and 'locked out' of markets. The only option for small-scale farmers to improve their livelihoods is to join modern markets ('locked in'), however, looking at their characteristics – small-scale farmers are not prepared for such high requirements ('locked out') (Dorward and Kydd, 2002).

To succeed on the global food market, small-scale farmers need to exploit opportunities for tighter business linkages and vertical integration to capture the market share for themselves. Fostering institutional innovations such as contracts between small-scale farmers and agribusiness companies can overcome current limitations for small-scale farmers (Kherallah and Kirsten, 2001; Hazell *et al.*, 2010; Wiggins *et al.*, 2010). Linking small-scale farmers through contracts with private

companies is usually the task of the government, NGOs and civil societies. If contracts can improve the currently poor status of small-scale farmers in modern agri-food supply chains and maximise farmers' potential and benefits, then contracting might efficiently help in strengthening the small-scale agricultural sector in developing countries and facilitate its better integration into global markets. Hence, contract farming is a solution worthy of consideration.

3.5 Summary

This chapter positioned contract farming in the wider context of modern agri-food supply chains. Spurred by globalisation and market liberalisation, transformed agri-food industry requires tight coordination, high quality and safety standards, consistent supply and quick adjustment to consumers' needs. Small-scale farmers have poor status within modern chains due to their limited access to land, inputs, technology, information and finances. However, as a form of vertical integration, contract farming offers options to small-scale farmers. Chapter 4 introduces contract farming and its benefits for small-scale farmers in developing countries.

Chapter 4 Contract Farming: Solution for the Agri-food Supply Chains

4.1 Introduction

In chapter 4, contract farming is explored in-depth. Foundations for understanding contractual arrangements and the importance for developing countries are first elaborated. The most recent research endeavours regarding contract farming are outlined to capture the progress in the field. The chapter further elaborates on the legal side of contracts and synthesises the best practices for contract design. The last two sections of this chapter explore the benefits of contract farming for involved parties and use the empirical evidence from developing countries to make a case for contracting as a viable solution for modern agri-food supply chains.

4.2 The Phenomenon of Contract Farming

Contract farming is not a new phenomenon, and it can be tracked back to the 19th century when it was used in Asia and Latin America (Will, 2013). Modern contracting started in the 1960s, and it was encouraged by emerging globalisation ideas (Weatherspoon *et al.*, 2001). Jia and Bijman (2013) pointed out that behind the core of contract farming, there was an attempt to increase the dynamics of rural development, internationalise agriculture and assist the rural poor in integration into industrial sectors. In Africa, contracts were introduced in the late 1980s in the form of out-grower schemes where farmers cultivated the crop further marketed by a multinational company; thus, contracting represented an alternative to government-related price and market controls and established a needed link between farmers and markets (Weatherspoon *et al.*, 2001; Jia and Bijman, 2013). In the past decades, contracting has significantly expanded, especially in the developing world, covering a broad range of agricultural commodities (Figure 4.1) (ActionAid, 2015).

Most African countries count more than one million farm households; however, the overall level of households' engagement in contract farming is less than 5% (Minot, 2011).

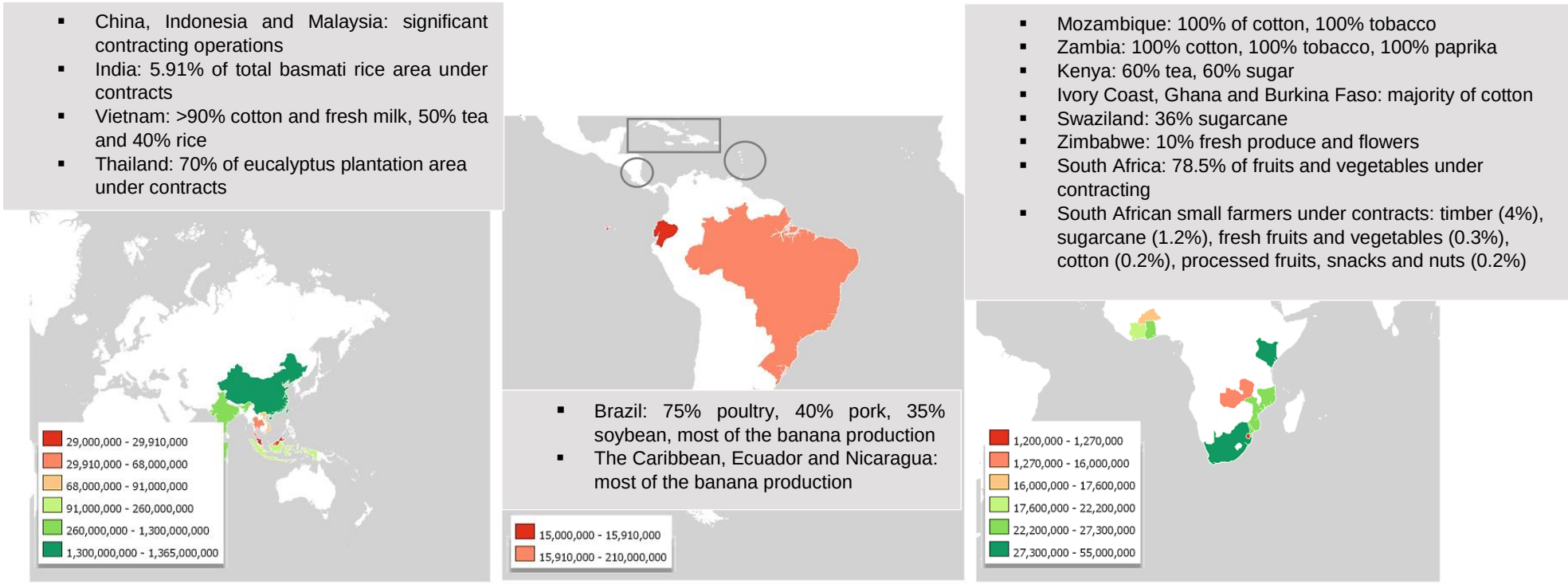


Figure 4.1 Spread of contract farming in world regions

Source: Author's compilation based on UNCTAD (2000), Vermeulen *et al.* (2008), ICRAF (2007), UNCTAD (2009), Fréguin-Gresh *et al.* (2012), Oya (2012), Boulay (2013), Goel (2013), ActionAid (2015), World Bank (2015).

Note: Legend on each map shows a total population size. Map: FAO (2015d).

Oya (2012, p. 6541) concluded that '*there is still no substantiation that [contract farming] is a dominant form of production, despite the increase in the number of studies and reports, and the fact that market liberalisation and globalisation seem to have spurred outsourcing in the form of privately led [contract farming]*.'

The underlying purpose of contract farming in the modern agri-food industry is not unanimously accepted. An on-going debate exists regarding the question whether contracting can become the primary driver for rural development and economic growth in developing countries. The main critique of contract farming as a means for achieving developmental goals rests on the argument that contract arrangements often exclude small-scale farmers or do not enable farmers to fully access promised benefits (Miyata *et al.*, 2009; Minot, 2011). Da Silva (2005) and Miyata *et al.* (2009) highlighted that contracting should not be considered as a one-size-fits-all solution for improving performance in the agri-food industry of developing countries since it is only applicable and efficient in certain circumstances. Similarly, Minot (1986, 2011) warned that contract farming should not become a foundation for rural development and poverty alleviation strategies, as it is not suitable for all sectors and farmers. Woodend (2003) and Will (2013) stressed that contracts are not a panacea for small-scale farmers and although often supported by governments and donors, contracting schemes that are structured to support national development goals (such as rural development and commercialisation of the small-scale agricultural sector) might experience failures.

Stated views on contracting are consistent with the evolving paradigm shift addressing agriculture: even for small-scale farmers, the agricultural activity is now considered as a potentially comprehensive business that relies upon and triggers many adjacent units, such as institutions and policies, organisational management, quality and safety standards, sustainable development and others. In this sense, contract farming is more likely to encourage small-scale farmers with entrepreneurial aspirations and neglect categories of vulnerable and risk-averse small-scale farmers. This is not to claim that contract farming does not offer opportunities for small-scale farmers. On the contrary, when organised transparently, with clear and achievable profit targets for both parties and in collaboration with an enabling environment that

promotes sustainable growth, contracts might significantly improve small-scale farmers' livelihoods.

[27]Nonetheless, contract farming is a business activity rather than an aid tool as contracts '*that are primarily motivated by political and social concerns rather than economic and technical realities will inevitably fail*' (Eaton and Shepherd, 2001, p. 3).

4.2.1 Defining Contracting

Contract farming can be defined in numerous ways according to its main features (Table 4.1). The primary attribute of the contract is to provide a link between farmers who produce a particular commodity and buyers interested in buying that commodity. Contract farming is firstly an agreement between two parties who want to exchange a specific product, and according to this purpose, they arrange future relations. Furthermore, contract farming is a governance form that can be considered within concepts of supply chain and the market. A raw commodity can be produced and sold by various channels, e.g. by an independent farmer or highly specialised processor. An independent farmer is likely to sell the commodity on the spot market, while a processor might have developed a full vertical integration for its commodity.

Understanding contracts as institutional arrangements intended to overcome market imperfections (such as high transaction costs or lack of input markets and information asymmetry in developing countries) is consistent with the NIE perspective. The institutional aspect of contract farming is gaining momentum and studies often refer to contracting from an institutional point of view (for example, Kherallah and Kirsten, 2001; Sartorius and Kirsten, 2007; Cook *et al.*, 2008; Sykuta, 2008; Chirwa and Kydd, 2009; Jia and Bijman, 2013). A contract can also be defined as a mean of allocating values, risks and rights among parties. This implies that contract clauses reflect parties' agreement on how gains, uncertainties in production and marketing, and the right of buying and selling will be addressed.

According to the degree of parties' control and level of market uncertainties, contract farming is often defined as a governance form between spot markets and full vertical integration.

[27] Benefits of contract farming are elaborated in more detail in section 4.3 of this chapter.

Table 4.1 Contract farming definitions by key characteristics

Main characteristics	Definition	Source
Link between farmers and buyers	'*Contract farming describes pre-agreed supply agreements between farmers and buyers*'.	Vermeulen and Cotula (2010, p. p. 29)
	'*Contract farming may be defined as agricultural production carried out according to a prior agreement in which the farmer commits to producing a given product in a given manner and the buyer commits to purchasing it*.'	Minot (2007, p. 1)
	'Contract farming (CF) is defined as forward agreements specifying the obligations of farmers and buyers as partners in business.'	Will (2013, p. 16)
Governance form between spot markets and full vertical integration	'*Contract farming is an intermediate form of industrial organisation in agriculture, standing between spot markets and full vertical integration*.'	Kirsten and Sartorius (2002, p. 511)
	'*Contract farming is the vertical coordination between growers of an agricultural product and buyers or processors of that product*.'	Warning and Key (2002, p. 255)
	'*Contract farming is generally a form of vertical integration between agricultural producers and buyers (exporters, agro-processing companies or retailers at the end of the value chain)*.'	Oya (2012, p. 2)
Institutional arrangement for overcoming market imperfections	'*Contract farming is explained as an institutional response to imperfections in markets for credit, insurance, information, factors of production, and raw product; and in transaction costs associated with search, screening, transfer of goods, bargaining and enforcement*.'	Key and Runsten (1999, p. 382)
	'*Contract farming schemes usually arise because of imperfections in the market environment that do not allow normal price signals to regulate supply. Thus, contract farming is in fact a response to market imperfections*.'	Bauman (2000, p 24)
	'*Theoretically, CF is often explained using the lens of new institutional economics (NIE) or, more specifically, transaction cost economics (TCE). Central to NIE and TCE is the idea that all transactions between economic actors involve transaction costs. These costs relate to finding a market/customer, negotiating, signing a contract, controlling contract compliance, switching costs in case of premature termination of the contract, and all lost opportunities. Transaction costs appear in different forms, but are mostly caused by uncertainty and/or asymmetric information*.'	Jia and Bijman (2013, p. 26)
Means of allocating values, risks and rights	'*Contracting is fundamentally a way of allocating the distribution of risk between the firm and its growers*.'	Glover and Kusterer (1990, p. 3)
	'*Fundamentally, every transaction has three basic elements: the allocation of value (or the distribution of gains from trade), the allocation of risk (when value is subject to uncertainty), and the allocation of decision rights. A contract is simply an institutional construct that outlines the mutually agreed upon rules (and expectations) of how these fundamental elements will be addressed in the transaction relationship*.'	Sykuta and Parcell (2002, p. 333)
	Contracting is fundamentally a way of allocating risk between producer and contractor; the former takes the risk of production and the latter the risk of marketing.	Barrett *et al.* (2012, p. 716-717)

Source: Author's compilation based on the literature review.

Table 4.1 Contract farming definitions by key characteristics – *Continued*

Main characteristics	Definition	Source
A legally binding forward agreement that defines terms for price, inputs, quality, quantity, delivery and purchase of the produce	'*Contract farming can be defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices. The arrangement also invariably involves the purchaser in providing a degree of production support through, for example, the supply of inputs and the provision of technical advice. The basis of such arrangements is a commitment on the part of the farmer to provide a specific commodity in quantities and at quality standards determined by the purchaser and a commitment on the part of the company to support the farmer's production and to purchase the commodity*.'	Eaton and Shepherd (2001, p. 2)
	Contracts usually involve advance agreement between producers and purchasers on some or all of four parameters: price, quality, quantity (or acreage) and time of delivery. Specific contract terms and arrangements determine how the parties involved share the benefits, costs and risks of coordination. These may deal with timing of payment; mechanisms for setting price; provision of services and inputs; documentation requirements; quality and quantity produced; arrangements for assessing quality; and mechanisms for settling disputes and enforcing agreements.	Singh (2002, p. 1621)
	'Contracting is an intermediate mode of coordination, whereby the conditions of exchange are specifically set among transaction partners by some form of legally enforceable, binding agreement. The specifications can be more or less detailed, covering provisions regarding production technology, price discovery, risk sharing and other product and transaction attributes.'	da Silva (2005, p. 12)

Source: Author's compilation based on the literature review.

The most wide spread and well-accepted definition of contract farming in the literature is that of a legally binding forward agreement between the farmer and buyer, which defines terms for the price, inputs, quality, quantity, delivery and purchase of a commodity. Although contracts vary significantly in their content and do not even have to be written, the latter definition provides some of the key elements needed for a fair contract relation.

For the purpose of this study, contract farming is defined as:
A forward written institutional arrangement between a farmer and a buyer based on the principles of trust and fairness, and with unambiguously and sufficiently defined terms and conditions for production and marketing of a contracted crop. The written contract enables transparency and serves as a proof of agreed terms and conditions. Also, a written contract implies stronger ethical obligation, and it is more binding compared to the oral contract. A contract is an institutional arrangement, and as such,

it is driven by the desire to arrange relations in most appropriate and efficient economic and social norms. Enough details in contract clauses and an opportunity for renegotiation can reduce incompleteness and vagueness. Finally, the elements of trust and fairness are rarely incorporated in contract farming definitions. By excluding principles of trust and fairness from the contract formulae, the incidence of opportunistic behaviour is likely to be high.

4.2.2 Pre-conditions, Motivation and Individual Characteristics as Triggers for Participation in Contract Farming

Preconditions

Before engaging in contract farming, some requirements need to be met. Based on the review of the existing literature, four main factors were identified and described as pre-conditions for contract farming:

(1) Parties' perception

The decision on participation in contract farming first and foremost depends on the perception that each party has regarding potential benefits from the contract. In most cases, the contract will be compared with the best possible alternative option. According to Bogetoft and Ballebye Olesen (2002) and Abebe *et al.* (2013), a party will engage in contracting only if the expected profit is at least equal to the party's best alternative option. This means that the driving force behind the participation is the expected similar or higher profit from selling the commodity to the buyer (in the farmer's case) or supplying the commodity through farmers (in the buyer's case) (Eaton and Shepherd, 2001). To participate in contract farming, parties must perceive that they are better off engaging in contracts than not doing so (da Silva, 2005; Barrett *et al.*, 2012).

The second assumption on participation involves the cost component. The parties will enter the contract if the benefits of contracting surpass its costs (Birthal, 2008; Minot, 2011; Jia and Bijman, 2013). For the buyer, this assumption implies that the costs of dealing with a bigger number of small-scale farmers must be outweighed by benefits from this decision. For the farmer, benefits received from the contract (e.g. access to credit and market information) must outweigh costs of dealing with the

buyer (e.g. transporting the crop to the collection point). Simmons (2002) argued that the contract must be attractive to parties by either increasing their profits or reducing the risks of the transaction. The participation in contract farming is likely to happen if farmers perceive that contracts are their only option to start a cash crop production and access lucrative markets (Glover and Kusterer, 1990; Kirsten and Sartorius, 2002; Bijman, 2008).

(2) Type of buyer

Contract farming requires large expenses on the buyer's side; thus, not all buyers are suitable to perform contract farming operations successfully. Eaton and Shepherd (2001) and Minot (2011) described a type of buyer capable of becoming a contractor. The authors highlighted that the contractor needs a supporting team of field officers for negotiations, input distribution, technical assistance and collection of the commodity. The contractor must identify the market and have precise calculations on needed volumes to supply that market in the long run consistently. Thus, the contractor is likely to be a large-scale processor, exporter or supermarket chain rather than a traditional wholesaler or small- and medium-scale buyer. The advantages of a large-scale contractor lie in its access to capital, knowledge and market information so this type of a buyer can offer credit, extension services and a secured outlet to contracted farmers (Minot, 2011).

(3) Commodity

Similar to the type of buyer, the criteria for the commodity acceptable for contracted production are known in the literature. It is recognised that heterogeneous, high-value, perishable, non-traditional, labour-intensive cash crops with high-quality standards are eligible for contracting (Jaffee, 1994; Delgado, 1999; Baumann, 2000; Minot, 2011; Vermeulen and Cotula, 2011). The key reasons why stated characteristics make a crop suitable for contract farming are potential high transaction costs, technically demanding production and needed know-how, high premiums that can cover costs of contracting for the buyer and no open market (Minot, 2011; Singh, 2011; Prowse, 2012). In the case of described conditions, the contractor will have a foundation to offer contracts to farmers and achieve a sort of monopsony component that '*is the only way to ensure that companies can secure a return on their money*' (Baumann, 2000, p. 24). In contrast, food crops are mostly

not attractive to contractors due to their relatively low value and high risk of either retaining the crop for the household consumption or side selling it (Woodend, 2003). The following commodities have been recorded as contracting crops: fruits and vegetables, horticultural crops, organic products, spices, flowers, sugarcane, tea, tobacco, coffee, cotton, cocoa, rubber, palm oil and seed crops (Delgado, 1999; Baumann, 2000; Miyata *et al.*, 2009; Minot, 2011).

(4) Environment

The last pre-condition for contract farming is the environment, which refers to both physical and social factors. Regarding physical factors required for contracting, Eaton and Shepherd (2001) listed utilities and communication services, appropriate roads, water, electricity, land and inputs as needed pre-requisites. In addition, social factors desirable for contracting in small-scale farmers' situation are the existence of farmer groups or associations due to their potential to increase farmers' bargaining power (Dinham, 2003). Besides collective action, Bijman (2008) also highlighted supportive state policies and the presence of non-governmental organisations (NGOs) as one of the conditions for successful contract farming for farmers.

According to Schipmann and Qaim (2011, p. 676), trust is regarded as '*the most important factor in the relationship between farmers and buyers*', thus it should be considered as part of the social pre-conditions for contract farming. For instance, in the recent study of Sluis and De Giovanni (2016), the authors reported that when players in the supply chain trust each other, the supply chain coordination could be reached through price negotiation and by identifying profit-sharing mechanisms. Similarly, Singh (2011) and Groenewald *et al.* (2012) argued that a trustworthy relationship between the buyer and farmers in contract farming is essential.

In contrast, the lack of trust might lead to operational and economic inefficiencies as neither party is motivated to honour the agreement (Shepherd, 2007; Sluis and De Giovanni, 2016). Moreover, Will (2013) attributed the absence of trust to one of the key reasons why contract farming still does not prevail in industrialised economies. Fréguin-Gresh and Anseeuw (2013, p. 100) concluded that '*contracts solely based on a "business plan" to generate profits and short-term profitability are rarely successful or appropriate*'. Thus, the trust factor plays a significant role in

contracting and potentially influences the success of the agreement. One might argue that the trust develops over time and cannot be considered as an *a priori* condition for contracting between the buyer and farmers. While this point is valid, the reverse situation – the absence of trust – is likely to discourage any attempt to contract. Disproving the importance of trust as a pre-condition for contracting might lead to an oversimplified understanding of contracting as a straightforward and logical agreement between two parties with no need for building social capital. If posed as a debate on what comes first – the trust or the contract, the matter of trust turns into (at least) a visible potential pre-condition for contracting.

Motivation to join contracting

Except for pre-conditions, a motivation for contracting from farmers' side will influence the decision whether to contract or not. Motivation represents concrete, tangibly perceived benefits; thus, it develops once the initial perception on contracting is in favour of participation. In developing countries with imperfect input and output markets, farmers' primary motive for contracting is to obtain missing provisions. Indeed, throughout reviewed empirical studies, farmers expressed the following motives for entering contracts: access to market, guaranteed market price, stable income, access to credit and quality inputs, risk sharing, reduced production and marketing costs, and technical assistance (Echánove and Steffen, 2005; Masakure and Henson, 2005; Swinnen and Maertens, 2007; Guo and Jiang, 2007; Imbruce, 2008; Sharma, 2008; Vavra, 2009; Schipmann and Qaim, 2011; Abebe *et al.*, 2013; Briones, 2015). In contrast, Schipmann and Qaim (2011) found that non-contract farmers refuse to join contracts due to the potential loss of independence, lower prices and limited bargaining power.

Individual Characteristics

Characteristics of farmers' household can help predict to a certain extent whether farmers are likely to participate in contract farming. For example, Costales *et al.* (2008) and Swain (2012) suggested that farmers with larger farm size, access to irrigation, higher educational level and bigger family size were keener to engage in contracts. Similarly, available extension services, access to credit and membership in a farmers group will increase the likelihood of households' participation (Simmons *et al.*, 2005; Sharma, 2008; Kariuki and Loy, 2016). Miyata *et al.* (2009) argued that

the distance to the house of the village head influenced participation in contract schemes as farmers living near the village head were more likely to have contracts. The availability of labour was also found to influence participation levels (Costales *et al.*, 2008; Miyata *et al.*, 2009).

Nonetheless, Barrett *et al.* (2012) offered a counterargument to the claim of generalizable causal relationship regarding farmers' characteristics and participation in contracting. Based on the comparative study of cases in Madagascar, Mozambique, Ghana, India and Nicaragua, the authors concluded that farm size does not influence participation. Access to irrigation and membership of a farmers' group were associated with contract farming participation. Barrett *et al*. (2012) warned on possible partial endogeneity of stated variables to participation.

4.2.3 Different Models and Types of Contract Arrangements

Agricultural contracts differ significantly in their design and context. In many cases, contracts supplying agricultural commodity are regarded as forward contracts where two private parties agree on a particular price for the produce and the produce is delivered later on according to the determined date (MacDonald and Korb, 2011). Contracts are divided into two exclusive categories: implicit and explicit contracts. Gürtler and Gürtler (2014) provided explanations for the differences between the two:

- *Implicit contracts* are known as informal or oral contracts, and they rely on observable but non-verifiable information. Implicit contracts can be built on recognised values, such as mutual trust, friendship, respect and reliability of involved parties. These kinds of contracts do not rely on forms and can be concluded by a mere handshake. Implicit contracts are not enforceable by courts but through self-enforcement.
- *Explicit contracts* or formal written contracts are founded on verifiable information and can be enforced by courts. Explicit contracts consist of various clauses. Clauses are a particular part (sentences or sections) of the contract that specify provisions such as rights, duties and privileges of each party. These contracts vary in length starting from a half of a page and up to hundreds of pages.

Despite the prevailing opinion on the low reliability of implicit contracts, there is some evidence in the contract farming literature that points to the contrary. For instance, Narayanan (2012, p. 1) stated that contracts in India were '*seen more as a relationships and less as contracts*'. Costales *et al.* (2008) found that informal contracts were less exclusionary in the case of small-scale farmers, and households with higher educational levels, full-time farming operations and reported farming as their main occupation were more likely to participate in informal contracts. Imbruce (2008) noted that as farmers in Honduras gained bargaining power, they encouraged their contractor to abandon written contracts. It is not entirely clear whether the degree of contract formality influences parties' performance.

In the case of explicit agricultural contracts, the literature distinguishes between contract models and types. Contracting can be organised through five different contracting models: centralised, nucleus estate, multipartite, informal, or intermediary models (Eaton and Shepherd, 2001) (Figure 4.2).

In a centralised model, a buyer supplies the product from a large number of farmers. This model involves high-quality standards and processing, as well as quota allocation and various degrees of input provision – from the buyer's minimum involvement to overtaking the control of production process (Eaton and Shepherd, 2001; Prowse, 2012). A centralised model is suitable for tea, vegetables, tree crops, poultry and dairy (Eaton and Shepherd, 2001).

In a nucleus estate model or so-called out-grower scheme, the buyer supplies the product from a large number of farmers and also manages their own estate or plantation. The estate or plantation is used as a guarantee for the buyer's regular and controlled supply while farmers' supply increases available volumes at the buyer's disposal (Eaton and Shepherd, 2001; Prowse, 2012). This model includes a significant proportion of inputs provided to farmers (Eaton and Shepherd, 2001).

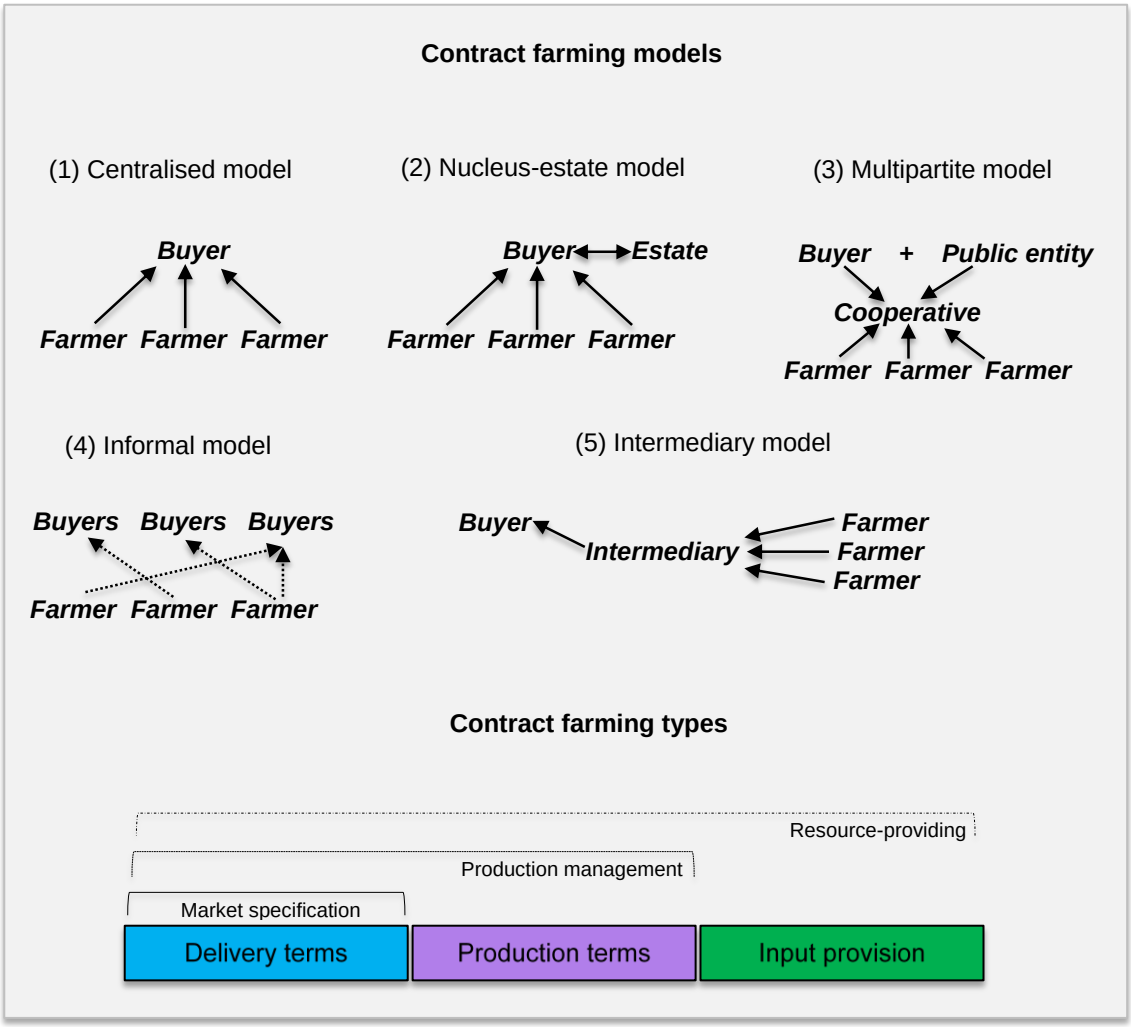


Figure 4.2 Types and models of contract farming arrangements

Source: Author's adaptation based on the literature review.

A multipartite model may include various public and private institutions gathered to supply a particular commodity. Usually, the contract will include the buyer, a farmers' organisation as the representative of farmers and a national financial institution. Since this model can include the government, it is regarded as potentially politicised (Prowse, 2012).

An informal contract model gathers individuals who trade between themselves on a seasonal basis without a formal agreement. The inherited challenges with informal models involve a high incidence of side selling and the need for government support in the form of extension services (Eaton and Shepherd, 2011; Prowse, 2012).

In an intermediary model, the buyer might not have direct contact with contracted farmers as the operations are organised through intermediaries, such as farming committees or traders (Prowse, 2012). This model is used to supply fruits and vegetables that need minimal processing, and the risk includes the loss of control over production and quality standards of the product due to lack of direct linkages with farmers (Eaton and Shepherd, 2001).

Bijman (2008) and Will (2013) (based on Mighell and Jones, 1963) described three types of contract farming arrangements (Figure 4.2). First, in *market specification contracts*, the producer and contractor agree on the terms of delivery (such as quantities, qualities, and timing). The producer bears most of the production risk but retains the control over the majority of the production-related decisions. The marketing risk is distributed between the parties. Second, *production management contracts* involve delegating a substantial amount of decisions regarding cultivation and harvesting from the producer to the contractor. The producer agrees to follow the production and input regime suggested by the contractor because the contractor takes over most of the marketing risk. Lastly, in the *resource-providing contracts* the contractor secures the market and the key inputs for the production. The inputs are offered as in-kind credit and are subject to recovery upon product delivery. The degree of control in this type of contract could vary. Resource-providing contracts can be similar to production-management types where the producer's degree of control is low. Also, resource-providing contracts can focus on solely providing markets and inputs, leaving more production and marketing risk to the producer. The contract model and type will be influenced by variables such as the crop characteristics (e.g. one-season or perennial crop), the status of the producer (e.g. individual or in the group), and the final destination (e.g. local or export market).

4.2.4 Importance of Contract Farming for Developing Economies

Assessing the importance of contract farming for developing economies is becoming more and more relevant as the interest in contracting increases (Bolwig, 2012). This section explores what contract farming offers to developing countries.

In many developing countries, processes of globalisation and market liberalisation influenced governments to lessen their involvement and support in the agricultural

sector. This is reflected in decreasing state subsidies for agricultural inputs and extension services, and abandoning protected producers' prices. Since the agri-food industry has continued to transform with the introduction of supermarkets and export supply chains in developing economies, government withdrawal from the agricultural sector has left a gap between the small-scale and emerging lucrative international and global markets. Contract farming arrangements hence connect small-scale farmers with potential markets (Birthal *et al.*, 2007; Singh, 2011). Contracting can be efficient in countries with a substantial small-scale agricultural sector as it can promote and export activities and influence the transformation of the subsistence and dependent agricultural sector into a more commercialised one (Singh, 2002; Woodend, 2003). Nevertheless, the limitations of contracting in playing a more robust developmental role should be respected (as mentioned by Minot, 2011; Will, 2013).

Contract farming is known to initiate development of public-private partnerships, as noted by Singh (2011), and thus encourage governments to offer indirect support by providing incentives for corporations entering the agribusiness sector through contracting schemes (e.g. multipartite model). Also, Sautier *et al.* (2006, p.22) suggested that contracting has the potential to create industry employment, and therefore public policies can play a role in supporting contract farming to '*become a suitable institution with implications concerning equity, efficiency and sustainability*'. Through contracts that require controlled production, new technology adoption and complying with high-quality standards, developing countries can build their internal capacities and follow the latest advances in international markets.

Contract farming can create positive spill-over effects, such as the emergence of private and modern input supply providers or post-harvest processing and distribution units due to the high demand for various quality inputs and a strict regime related to post-harvest handling (Reardon and Barrett, 2000). Another advantage of contract farming in a developing country is related to the state's legislative framework. For example, the government in India placed significant efforts on building an effective legislation for better contract enforcement and dispute resolution while preserving the interests of both farmers and companies (Narayanan, 2012). Financial institutions and banks might recognise the benefits of

contract farming and provide needed credit for small-scale farmers who would not be able to access financial inputs in other circumstances (Sharma, 2008).

Perhaps a less obvious potential contribution of contract farming to the state is its usage as a means of crop diversification (Tripathi *et al.*, 2005). Fréguin-Gresh and Anseeuw (2013, p. 80) suggested that contracted production might be considered as '*a way to integrate [native] smallholders in the mainstream agricultural economy*' in South Africa, which implies significant progress in social terms.

4.2.5 Recent Research Directions and Methodology Used in Exploring Contract Farming

In terms of exploring the contract farming concept, most studies focus on:

- A general comparison of livelihood conditions among contract and non-contract farmers (Reardon and Gulati, 2008; Miyata *et al.*, 2009; Narayanan, 2012) and determinants of participation (Barrett *et al.*, 2012; Swain, 2012),
- Relations with other stakeholders in the supply chain, the role of the enabling environment in supporting contracts, variations in contract configuration and small-scale farmers' motivations and preferences (Masakure and Henson, 2005; Abebe *et al.*, 2013; Briones, 2015), trust, information asymmetry and future markets (Masuku, 2009; Algieri and Kalkuhl, 2014),
- The role of the New Institutional Economics and its performance (Brousseau, 2008),
- The impact of contracting on farmers' gains (Ramaswami *et al.*, 2006; Jones and Gibbon, 2011; Narayanan, 2014; Girma and Gardebroek, 2015), crop productivity (Sharma, 2008) and distribution of benefits from a gender perspective (Bolwig, 2012).

Furthermore, the emergence of new ways of marketing commodities in Sub-Saharan developing countries, such as supermarkets and auction floors, opened a path for exploring the acceptance and the influence of more rigorous procurement systems that offer both opportunities and challenges for small-scale farmers (for example Weatherspoon and Reardon, 2003; Cadilhon *et al.*, 2006). Additionally, researchers are looking at the legal side of the contracts – what are the options offered and whose

benefits are more important in the case of breaching the contract (for example Cotula 2010, 2011; Huh *et al*., 2012; Pultrone, 2012).

From the methodological point of view, numerous studies used a quantitative perspective, including means of statistical and econometric analysis, to provide an evaluation of contracting schemes. In particular, the empirical studies reviewed in Table 4.2 assessed: (i) small-scale farmers' degree or likelihood of participation in contracting arrangements, (ii) contract's impact on the small-scale farmers' income generation, and (iii) differences in incomes between the contract and non-contract small-scale farmers (for example, Miyata *et al.*, 2009; Bellemare, 2012; Narayanan, 2014; Briones, 2015; Girma and Gardebroek, 2015).

The majority of quantitative studies presented in Table 4.2 used the household questionnaire as an instrument for data collection while the analyses involved probit and logit models, ordinary least squares and the Heckman selection model. There are some inherited challenges with the idea of measuring the impact of the intervention on farmers' livelihood. According to Barrett *et al.* (2012), most empirical studies that evaluated the effects of contracting on small-scale farmers' welfare were limited in proving the causality between the income and participation in the contract due to the presence of unobservable factors, such as the placement and selection bias. Da Silva and Rankin (2013) further suggested that the evaluation of contracting effects should consider a longer-term dynamic, and employ longitudinal sample surveys to control for confounding variables.

Table 4.2 also outlines qualitative studies conducted on contract farming. The instruments for data collection included a case study approach using interviews with different stakeholders engaged in contract farming schemes. It was observed that qualitative studies provided rich data in terms of describing the context of contract farming, roles and relations between the key stakeholders and challenges they face. However, contract farming studies employing a qualitative approach only were scarce.

Table 4.2 Review of the methodology used in recent studies of contract farming

Qualitative approach	Quantitative approach	Mixed methods approach
Strohm and Hoeffler (2006): 29 interviews with farmers, producer groups, exporters and processors. Analysis: Narrative, five commodities.	Costales *et al.* (2008): Survey with 400 farmers (200 independent, 166 with informal contracts and 34 with formal contracts). Analysis: Simple probit and multinomial logit model to determine the likelihood of engagement in formal or informal contract, one sector.	Singh (2002): Interviews with the farmers' groups and company officials, and survey with 108 farmers. Analysis: Narratives and quotes for qualitative data, descriptive statistics for quantitative data (frequencies and percentages), one commodity group.
Singh (2006): Case study through interviews with 12 farmers. Analysis: Narrative, one commodity.	Miyata *et al.* (2009): Survey with 162 farmers. Analysis: Probit model to estimate the probability of participation in contracting, Ordinary least squares (OLS) model to estimate per capita income, Heckman selection-correction model also the estimation of per capita income, two commodities.	Masakure and Henson (2005): Exploratory interviews with key informants, 40 in-depth interviews with farmers, a survey with 300 farmers Analysis: Narrative and quotes for qualitative data, K-means cluster analysis for quantitative data, one group of a commodity.
Phoumanivong and Ayuwat (2013): In-depth interviews with 10 key informants (buyers, officers and production groups) and 20 households to explore impacts of contract farming on rural households. Analysis: Content analysis, one commodity.	Bolwig *et al.* (2009): Survey with 112 certified organic and 48 non-certified farmers. Analysis: probit model for scheme participation and Poisson model for the use of organic practices, Ordinary least squares (OLS) and a full information maximum likelihood (FIML) estimate of the Heckman selection model for the effect of certification and organic practices on revenue, one commodity.	Simmons *et al.* (2005): Key informant interviews and survey with 800 farmers. Analysis: Narrative for qualitative data and probit analysis to identify factors contributing to participation in contracting and two-stage estimation process (linear probability model and ordinary least squares) to measure the effect of contract participation on gross margins and labour use for quantitative data, three commodities.
Han *et al.* (2013): Case study through the interview with four contracting companies to explore contract management. Analysis: Narrative with tabular summaries, one sector.	Schipmann and Qaim (2011): Survey (choice experiment) with 244 farmers (112 on contract and 132 non-contract). Analysis: Mixed logit model for farmers' market channel choice, one commodity.	Vermeulen *et al.* (2008): Interviews and survey with 61 contracting companies to explore procurement arrangements. Analysis: Narrative and tabulation for qualitative data and descriptive statistics for quantitative data, 12 commodity groups.
Fréguin-Gresh and Anseeuw (2013): Case study through the interview with one contracting companies (one exporting and one processing company) to present a characterisation of contract procurement patterns. Analysis: Narrative with visuals, one commodity.	Jones and Gibbon (2011): Repeated household survey (2005 and 2009) with 222 farmers. Analysis: Ordinary least squares (OLS) to measure the impact of contract farming scheme on farm income, one commodity.	Chirwa and Kydd (2009): Focus group interviews with farmers' groups, life histories of farmers who witnessed events over time and interviews with managers of agribusinesses, and a survey with 190 farmers. Analysis: Narrative for both type of data, one commodity.

Source: Author's compilation based on the literature review.

Table 4.2 Review of the methodology used in recent studies of contract farming – *Continued*

Quantitative approach	Mixed methods approach
Bellemare (2012): Survey with 1,200 farmers. Analysis: Probit model, treatment regression and Ordinary least squares (OLS) to estimate the impact of participation in contracting on household welfare various commodities.	Fréguin-Gresh *et al.* (2012): Interviews with 40 households and survey with 335 farmers. Analysis of qualitative data – the agrarian systems diagnostic approach to categorise factors influencing the transformation of the rural environment and a livelihood approach to understand the combination of activities and income sources. Analysis of quantitative data: probit model to analyse the uptake of contracts, the first step of Heckman model (probit analysis) to determine whether farmers commercialise their agricultural produce, and the second step of Heckman model (regression analysis) to identify determinants of farm income for farmers under the contract, various commodities.
Abebe *et al.* (2013): Survey with 72 contract and 72 non-contract farmers (analytical hierarchy process and discrete choice experiment). Analysis: Conditional logit model to investigate the importance of contract design attributes one commodity.	Prowse and Moyer-Lee (2014): Participatory rural appraisal, 8 focus group discussions, dozens of semi-structured interviews and household survey with 127 farmers + follow-up survey with 46 farmers. Analysis: Narrative and diagram for qualitative data and descriptive statistics and simple calculations for quantitative data, one commodity.
Narayanan (2014): Survey with 474 farmers. Analysis: Kolmogorov-Smirnoff test of equality of distributions of net profit and endogenous switching model to estimate net farm profits from participation in contract farming, four commodities.	
Briones (2015): Survey with 316 farmers. Analysis: Multivariate analysis including least squares regression, tobit and probit models and Heckman's two-step estimator to assess the impact of contract farming on farm profitability and which variables affect participation in contract scheme, one commodity.	
Girma and Gardebroek (2015): Survey with 195 farmers. Analysis: Ordinary least squares (OLS), probit regression and propensity score matching to assess the effect of different factors on farmers' income, one commodity.	
Kariuki and Loy (2016): Analysis: Survey with 249 farmers. Multivariate probit model to test whether selected variables impact different strategies of interest, one commodity.	

Source: Author's compilation based on the literature review.

Narratives were mostly employed to present studies' findings. Since one of the most severe critiques of qualitative studies is that they use a loose analysis, the use of established analytical procedures (such as thematic or content analysis) could have increased the credibility and consistency of selected qualitative studies.[28]

A mixed method approach in exploring contract farming was also considered (Table 4.2). Some studies combined interviews with stakeholders and questionnaires. Focus group discussions were less represented. The analysis included narratives and quotations from interviews for qualitative data. In the case of quantitative data, the analysis ranged from narrative and simple descriptive statistics to probit models and ordinary least squares. The advantage of a mixed methods approach in studying contract farming reflects in the robustness of outcomes as the qualitative data provide the width and depth and quantitative data the unobservable relations among particular variables. This comprehensive understanding of the phenomenon is important for shaping recommendations to direct public policies and government incentives. Since greater attention is given to the mixed methods approach in recent years, contract farming studies might increasingly apply mixed methods in the future, while use of a solely qualitative approach is likely to decrease.

4.3 Design and Legal Dimension of Contract Farming

4.3.1 Structure of a Contract

Contract design is defined as the structure and content of the contract (Furlotti, 2007). Da Silva and Rankin (2013, p. 11) argued that '*despite differences in contractual features as a function of product specificities and particularities of the enabling environment, it appears that a tendency towards a convergence in clauses and conditions does exist*'. Despite variations among contracts, an example of a complete contract for a horticultural crop would contain most of the clauses defined in Table 4.3.

[28] The critique is discussed in more detail in chapter 7.

Table 4.3 Structure of a general agricultural contract

Clause	Definition
Parties to a contract	Group or individual entity entering into an agreement and accepting contract terms and conditions. Identification of parties is usually through ID, name, address and telephone.
Preamble	Underlying reasons for contracting and the nature of the relationship between parties.
Duration	Date of signing the contract and the exact duration of the contract.
Input provision	Provision of inputs to cultivate or deliver the product (e.g. seeds, fertilisers, chemicals, bags).
Training	The obligatory or free instructions on agricultural practices provided by the buyer or third party to assure the quality of the final produce.
Quantity	An explicit statement of production volumes that the farmer has to deliver to the buyer or the buyer is obliged to buy from the farmer. Quantity can be determined explicitly, as minimum quantity, as a quota, or variable quantity depending on the buyer's orders.
Delivery	Definition of terms (e.g. time, frequency, location, transport means and form) for exchanging the product.
Grades	The explicit specification of grades for the product, i.e. the description of quality levels for the product (e.g. colour units, moisture level allowed, % of damage).
Price	The precise amount or formulae to determine a final amount to be paid to the farmer, taking into consideration variations in quality of the product, financial obligations, such as loans for inputs and services received, and conditions on the international market.
Payment	The procedure and timing (prior, upon or after delivery) for paying the farmer.
Quality/quantity failure	An indication of the remedy/compensation if one or some of the contract terms and conditions regarding the quality or quantity are not completed.
Breach	Deliberate and conscious violation of agreed terms and conditions coming from either party. It can result in contract termination or compensation procedures.
Liabilities	Party's legal responsibility for acts or omissions (e.g. land title and business licence).
Termination	Describes conditions under which either party has the right to exit from the contract.
Disputes	The case of conflict between parties regarding the definition or performance of agreed terms and conditions. It might be settled through mediation, arbitration or the court.
Force majeure[29]	A provision that frees both parties from the obligation if an extraordinary event occurs. An extraordinary event includes unforeseeable and unavoidable situation, which is not the result of party's actions.
Applicable law	National or regional law competent for dealing with contractual arrangements, and especially with possible disputes.
Signatory	The warranty that the person signing the contract is an appropriate one and has the authority to execute the contract. All responsible parties are signing the contract.

Source: Author's compilation based on Echánove and Steffen (2005), Kelley (1995), Vermeulen *et al.* (2008), Melese, (2012), Prowse (2012), Pultrone (2012), da Silva Júnior *et al.* (2013), da Silva and Rankin (2013) and Legal Guide (2015).

[29] *Force majeure* events might include, but are not limited to, floods, droughts, extreme temperature shocks, epidemics, change in government and legislation, riots, strikes, conflicts, embargo and currency depreciation (Legal Guide, 2015).

Based on the reviewed literature, the structure of a contract can be divided into three main parts as follows:

(1) Preliminary matters or general parts of the contract

General parts of the contract are in most cases located in the introductory part. Here, contracts will usually first identify parties that are legally bound by the contract. Contracts might indicate the commodity of exchange and its preferred delivery form (e.g. fresh or dry, seeded or de-seeded). Some contracts contain a preamble, but this clause is not considered as a crucial one compared to others. The preliminary part may finish by defining contract duration and possible renewal.

(2) Specific terms and conditions

Specific terms and conditions are closely related to the commodity, production characteristics, and also model and type of a contract; therefore, the clauses vary considerably. Under this part, the contract might define inputs, volumes, delivery terms, grades, prices and payment method. Besides, rights and obligations of each party in different circumstances might be established, such as regarding training, delivery failures, breach, termination, disputes and *force majeure* events. If not stated in the introductory part, the applicable law is commonly indicated at the end of specific terms and conditions part.

(3) Closing part

The final part of the contract consists of individual signatures from involved parties. In many cases, the third party – the witness – is required to sign the contract.

Except for the number and schedule of the clauses (the structure of the contract), the attractiveness of the contract will significantly depend on what those clauses define. In other words, the design of the contract will have an influence on the final output in terms of parties' economic gains. Contract design pre-determines if the party receives benefits or carries the risks. Warning and Hoo (2000) and Narayanan (2012) found that food supply contracts in developing countries were ambiguous and one-sided, and lacked the fairness and farmers' participation in the design stage.

Contracts are often written in an incomprehensible technical language (Vavra, 2009; Cotula, 2011; Pultrone *et al.*, 2012). Maertens (2006) argued that contracts could be designed to favour buyers; thus, even if the farmer increases the productivity and quality levels of the product - the buyer will capture the entire premium, depriving the farmer of any meaningful benefits. This section outlined the contract structure. The following section provides recommendations on the content of contract clauses.

4.3.2 Legal Guide and Recommendations for Best Practices in Contract Design

'*Legal Guide on Contract Farming*' (throughout this study, the term 'Legal Guide' marks this publication) is a publication that represents a joint effort of several leading organisations concerned with the issue of contracting: International Institute for the Unification of Private Law (UNIDROIT), Food and Agriculture Organization (FAO) and International Fund for Agricultural Development (IFAD). Legal Guide was officially published in 2015 with the purpose as an '*advice and guidance on the entire relationship, from negotiation to conclusion, including performance and possible breach or termination of the contract'* (Legal Guide, 2015, p. xv). Legal Guide (2015) recognises the process of contract formulation as a critical point in building a long-term contractual relationship. Legal Guide (2015) promotes transparency, trust and good faith, close collaboration and negotiation between parties, and defining complete and detailed contract clauses. Ultimately, Legal Guide (2015) acknowledges the diversity of contracting conditions; therefore, it does not promote one contract form over another but rather serves as a reference point for contract designs, parties' legal position and available options. Legal Guide is formulated to advocate for improved contract design, which could then lead to enhanced contract farming administration.

According to Legal Guide (2015), the following clauses of an agricultural contract are particularly prone to manipulation: contract duration, quality, volumes, input provision, price and payment mechanism, breach, disputes and termination of the contract. Legal Guide (2015) suggested the best practices (see Table 4.4) in designing the contract and recommended core principles to guide parties in shaping their relationship as described below.

Table 4.4 Recommended best practices for the contract design

Clause	Best practices
Duration	As well as the exact duration period, the contract should define options for a renewal for each party (e.g. by express agreement, automatic renewal or according to the contractor's optimal judgement).
Input provision	The amounts and method of paying for inputs (cash, credit or deduction) should be set in the contract. This will provide a clear overview of costs and payments for each party.
Training	Instead of providing a general formula on farmers' obligation to comply with instructions, the contract should list specific tasks required. This will reduce possible misinterpretation.
Quantity	The quantity of produce should be clearly specified as: whole production, partial production or exact amount in kg/t/mT/bags. If the contract expects the whole production from the farmer, then '*whole*' must be defined, e.g. the whole production from x amount of hectares/acres or inputs provided. The ownership and selling right of possible excess should be regulated in the contract.
Grades	Quality requirements and appropriate grades should be expressed precisely, preferably with a formula or specifications in attachment to avoid possible misunderstanding and disputes. The farmer and third party should be allowed to witness and comment the grading process.
Price	As one of the most important contract term, the price should: (i) be clearly and completely defined at the time of signing the contract, (ii) secure a return rate that covers costs of each party and (iii) be calculated in a transparent manner and open for verification by the farmer and/or third party.
Payment	The payment method should be specified clearly in the contract, especially who, when and how will execute the payment. This will promote certainty and reduce possible disputes.
Quality/quantity failure	To avoid potential *ex-post* manipulations, the quality and quantity criteria should be clearly drafted in contract clauses. Possible penalties should be discussed between parties, not imposed.
Breach	What is considered as the breach from each party and consequences/remedies of the contract breach (e.g. termination, penalties or revision) should be clearly defined. If possible, the breaching party should be granted the right to cure (fixing the breach) within a reasonable time frame before application of remedies.
Termination	'*Termination at will*' should be avoided. A bilateral termination clause granting each party the right to terminate the contract should be used. Clear pre- and post-conditions for termination must be (e.g. 30 days prior notice and maintenance of confidentiality after exiting).
Disputes	The method of dealing with disputes should be discussed while drafting the contract. An agreed procedure (amicably, mediation, arbitration or courts) should give each party an equal position.
Force majeure	The difference between unforeseeable and uncontrollable events from one side and non-performance on the other must be clear. The *force majeure* clause must not be used to hide non-performance. Including a list of potential *force majeure* events will increase the clarity.
Applicable law	If possible, the applicable law should be tied to the country of production since farmers are more likely to be familiar with the domestic law rather than the international one.

Source: Based on the Legal Guide (2015).

1) Preliminary bargaining – refers to the negotiation between parties before accepting the contract offer. Each party should have the freedom to negotiate specific terms and the right to reject an economically unbalanced contract. Preliminary bargaining should reduce the incidence of adhesion type contracts, which are formulated in favour of a stronger party.

2) Avoiding vagueness – clauses defining price, payment, volumes, quality and contract duration should be sufficiently defined and precise to encourage the optimal performance of all parties and decrease the potential for disputes.

3) Practising reciprocity – refers to an equal right of parties to initiate a particular action or to be granted fair allocation of responsibilities in the contract. Reciprocity is especially needed in clauses defining contract renewal, breach, termination, dispute settlement and the right to sell or buy (indicated in Table 4.4 through the expression 'each party').

4.4 Benefits of Contract Farming in Developing Countries

Before elaborating on the benefits of contracting for farmers in developing countries based on the studies conducted, this section briefly considers advantages that contracts bring to the buyers.

The most prominent benefit of contract farming for buyers is the assurance of a continuous supply of quality raw product by applying technology and tight control of production processes, which helps to reduce uncertainty and costs (Minot, 1986; Kelley, 1995; Delgado, 1999; Kirsten and Sartorius, 2002; Singh, 2002; Ramaswami *et al.*, 2006; Prowse, 2007; Birthal, 2008). Regarding costs, contract farming can lower screening, selection and coordination costs, quality measurement and monitoring costs (Cook *et al.*, 2008; Prowse, 2012; Will, 2013; Wang *et al.*, 2014b). Contracting can also grant buyers access to land through contracted farmers, which is a challenge due to certain constraints on land ownership in some developing countries (Shepherd, 2001; Kirsten and Sartorius, 2002; Prowse, 2012). By contracting with farmers, the buyer does not need to own the land. However, the commodities grown on the land will be supplied to the buyer.

If the buyer supplies the commodity from small-scale farmers, the costs of hiring and managing the labour force will be minimised as small-scale farmers mostly rely on the unpaid family labour (Glover and Kusterer, 1990; Minot, 2011). According to Simmons (2002), contract farming might serve larger buyers as a means to expand their operations or diversify sources of supply. A buyer who offers contracts to vulnerable farmers might enjoy a higher reputation in public due to the inclusiveness of contracting as a model (Will, 2013). In addition, a positive image can encourage the government to award the buyer with sponsored subsidies for production or marketing activities within contract farming (Echánove and Steffen, 2005). The following sections summarise the key benefits of contract farming for farmers in developing countries as discussed in the literature.

4.4.1 Access to Technology and Extension Services

Contracted production often requires the adoption of modern technology in producing the commodity. Thus, contracted farmers can benefit from the access to technological information and assistance or new processing facilities that enable farmers to diversify into much more valuable commodity, which would otherwise be unattainable (Kherallah and Kirsten, 2001; Shepherd, 2001; Warning and Key, 2002; Simmons, 2002; da Silva, 2005; Bijman, 2008; Prowse, 2007; Smalley, 2013; Cai *et al.*, 2014a). Many contracts include a clause on the buyer's obligation to provide extension services for farmers (Woodend, 2003; Maertens, 2006; Sautier *et al.*, 2006; Shepherd, 2007; Miyata *et al.*, 2009; Prowse, 2012). The role of extension services is to transfer knowledge, build capacities and skills and encourage farmers to comply with the required production procedures (Birthal, 2008; Fréguin-Gresh and Anseeuw, 2013).

4.4.2 Access to Inputs

Poor financial capabilities usually do not allow small-scale farmers access to valuable inputs in required volumes. Without adequate inputs, small-scale farmers are likely to achieve low crop quality and small yields, while losses due to diseases might be substantial. Contract farming can overcome this constraint by ensuring seeds, fertilisers, pesticides, chemicals and other production inputs to farmers either on credit or deduction upon selling (Kherallah and Kirsten, 2001; Woodend, 2003; Singh, 2007; Maertens, 2006; Jia and Bijman, 2013; Will, 2013). For some

commodities, specialised inputs are hardly available in existing local markets. Through the contract, the buyer provides not only specialised inputs but also inputs at the right time to the farmer (Delgado, 1999; Dhillon and Singh, 2006; Fréguin-Gresh and Anseeuw, 2013).

4.4.3 Access to Credit

Apart from obtaining inputs, farmers may also gain access to credit (Simmons, 2002; Bijman, 2008; Minot, 2011; Smalley, 2013; Cai *et al.*, 2014a). In the case of a multipartite contract model, one of the parties to the contract could be a financial institution, which secures credit for farmers to improve their cash flow and enable investments in other farm and non-farm activities (Dhillon and Singh, 2006; Maertens, 2006). The buyer could also offer some credit scheme. Lending institutions sometimes accept contracts as a form of collateral (Prowse, 2012; Will, 2013). Dries *et al.* (2014) suggested that access to credit could be a strong incentive for farmers not to breach a contractual agreement. Key and Runsten (1999) argued that poor small-scale farmers are willing to pay the most to obtain credit; thus, the buyer has the additional motivation to offer the farmers a contract.

4.4.4 Secured Outlet and Price

One of the benefits of contracted production is the fact that farmers efficiently reduce their risk of uncertain markets and price by signing the contract. Buyers will purchase a farmers' commodity at pre-determined volumes and guaranteed price (Kirsten and Sartorius, 2002; da Silva, 2005; Birthal *et al.*, 2007c; Shepherd, 2007; Miyata *et al.*, 2009; Fréguin-Gresh *et al.*, 2012; Will, 2013). Contract farming might open up the opportunity for small-scale farmers to participate in otherwise unavailable lucrative markets, such as non-traditional and export markets (Woodend, 2003; Minot, 2011). Farmers might be awarded a premium price for adding more value to their product, which acts as an additional motivation to sustain the contractual relationship (Miller, 2003). By having a continuously secured outlet and a guaranteed price, the farmers can plan their strategy for improving livelihood conditions and better allocate available land and labour resources according to set priorities.

4.4.5 Reduced Production, Marketing and Transaction Risks

The consequences of enabled access to technology, inputs, credits, market and stable price are reduced production and marketing risks for the farmer (Minot, 1986; Kherallah and Kirsten, 2001; Maertens, 2006; Birthal, 2008). Contracts serve as a tool for mitigating stated risks since the buyer shares responsibilities and uncertainties with the farmer (Sharma, 2008). Agricultural production is highly sensitive to unpredictable and uncontrollable events, and prices on commodity markets often fluctuate with significant amplitudes.[30]

Thus, without contracts, small-scale farmers are likely to fail to cope with production and marketing risks (Ramaswami *et al.*, 2006). Contract farming might decrease farmers' transaction costs regarding searching for a reliable market that can receive produced volumes, acquiring market information on prevailing prices, obtaining relevant knowledge on production and accessing credit for needed inputs (Simmons, 2002).

4.4.6 Improved Productivity, Quality and Income Generation

Through contracting, the buyer exercises certain control over production processes. This is due to the buyer's interest to obtain needed volumes of high-quality produce from the farmer. In this sense, contracting will have the goal to encourage best practices in agricultural production through provision of inputs, technology and extension services. In turn, farmers are likely to increase their productivity and quality of the produce (Minot, 1986; Birhtal, 2008). Farmers might apply gained knowledge on producing the contracted crop to improve cultivation of other food crops and thus maximise their potential and increase household's food security (Maertens, 2006).

In addition to improved productivity and quality, the extant literature reports that contract farming potentially stabilises or increases farmers' income generation (Watts, 1994; Key and Runsten, 1999; Baumann, 2000; Kirsten and Sartorius, 2002; Warning and Key, 2002; da Silva, 2005; Dhillon and Singh, 2006; Bijman, 2008;

[30] Cashin *et al.* (1999) found that commodity prices rapidly and unexpectedly move from a price boom to a price slump, which represents a serious challenge to policymakers in developing countries that rely on export commodities.

Minot, 2011; Prowse, 2012; Abebe *et al.*, 2013; Smalley, 2013). Income stabilisation will occur thanks to the secured outlet and guaranteed price on which farmers can rely with their contracts. Increases in income might be due to accessing a new lucrative market, which offers a premium price compared to other commodities. Also, increased incomes could be directly related to increased volumes and quality of the commodity available for marketing; thus reflecting the result of provided inputs and knowledge through the contract.

4.4.7 Creating Employment

Contract farming can create more employment opportunities for farmers and non-farmers. Contracting requires high labour inputs, especially during the harvest, grading process, packaging, transport and marketing, and can prompt hiring neighbouring farmers or mobilise available rural working force (Singh, 2005). Besides, if the contracted commodity proceeds to processing facilities, this spurs a need for additional workers and has high non-farm employment effects (Warning and Key, 2002; Jia and Bijman, 2013). The contractor is likely to hire local experts as extension officers in the company due to their better orientation in the area, an advantage in knowing the local language and familiarity with farmers' attitudes.

4.4.8 Recent Empirical Evidence on Contract Farming Performance in Developing Countries

Contract farming is present both in developed and developing countries and in different proportions among small-, medium- and large-scale farmers. This section focuses on small-scale farmers in developing countries and benefits they experienced under contracts as this is in line with the broader aim and objectives of this study. The existing literature provides cases of contract farming from Sub-Saharan Africa, India and Latin America mainly; thus recent evidence from stated areas are presented (see Appendix A for the summary of selected studies).

4.4.8.1 Sub-Saharan Africa

Huddleston and Tonts (2007) explored an out-grower scheme in the palm oil industry in Ghana and found that contracting created employment in rural areas for both contracted farmers and farm workers, which had positive implications for agricultural development, and social and economic conditions of rural inhabitants.

Masuku (2009) investigated the sugarcane sector in Swaziland and concluded that mutual trust could enhance the performance of supply chain players and improve the entire supply chain. The author also suggested that contracting based on trust and cooperation is self-enforcing and can reduce transaction costs related to monitoring since there is no need for the presence of a third party (i.e. courts) (Masuku, 2009).

Three studies reported on the impact of contract farming in the case of organic production in Uganda. For organic coffee farmers, contracts secured the market and price premium for meeting agreed quality standards, which in turn lowered uncertainties about net returns (Bolwig *et al.*, 2009). Organic cocoa farmers were able to improve the quality of their crop and productivity due to credible incentives for adopting the technology (Jones and Gibbon, 2011). Contract farming improved food security for organic pineapple and coffee farmers since higher profits from certified organic crops increased household capacity to access needed food and decreased poverty levels among participants (Bolwig, 2012).

In Malawi, tea farmers who transferred from statutory contracts[31] to private-led contracts received better services and increased profitability of their farming (Chirwa and Kydd, 2009). In a study of the contract farming impact on the welfare of farmers producing various crops in Madagascar, Bellemare (2012) found that contracting increased total household income and suggested that promoting contracts can contribute to poverty alleviation. Fréguin-Gresh *et al.* (2012) and Fréguin-Gresh and Anseeuw (2013) explored the sub-tropical fruits and citrus sector in South Africa. Contracting increased farmers' incomes, allowed access to inputs, credit and information, and opened opportunities for participating in competitive markets (Fréguin-Gresh and Anseeuw, 2013).

In Ethiopia, Girma and Gardebroek (2015) studied organic honey supply and found that contracted farmers received premium prices and increased their income. Farmers growing vegetables in Tanzania received technical assistance and supervision through contracts, which encouraged integration into lucrative markets and helped farmers to develop new skills (Rüsch *et al.*, 2013). In addition, clear communication

[31] Statutory contracts are in most cases initiated by public entities.

between players and involvement of the village head as an intermediary contributed to the success of the contracting model (Rüsch *et al.*, 2013).

Empirical examples showed that farmers under contract farming in some Sub-Saharan countries gained benefits by improving their production and economic status. Three topics deserve further attention. First, contract farming proved successful in encouraging farmers to reach high-quality standards in organic production. Thus, complying with standards awarded farmers with the premium price and better revenues. Second, Masuku (2009) discussed the importance of trust for relations in supply chains and implied that trust is a vital part of contract farming. Third, Rüsch *et al.* (2013) extended on the point of trust by suggesting that transparent communication between parties and the presence of a trustworthy person (i.e. village chief) might positively influence the performance of contracts. This gives rise to re-considering players' roles and quality of relations as potential drivers for enhanced supply chains and contract schemes.

4.4.8.2 India

In Punjab and Andhra Pradesh, Singh (2002, 2003) studied the vegetables and cottonseed sectors and found that contracting increased farmers' incomes and opened opportunities for additional employment. Potato farmers in Haryana obtained higher yields, price and net returns under contracts compared to non-contract farmers (Tripathi *et al.*, 2005). Ramaswami *et al.* (2006) reported that contracted farmers in the poultry sector in Andhra Pradesh received higher gains and faced lower uncertainty as the great share of market risk was shifted to the buyer. The authors concluded that contracts represent useful institutional arrangements suitable for providing insurance, technology and credit to farmers (Ramaswami *et al.*, 2006).

Using an econometric analysis based on a sample of 127 farmers (contract and non-contract farmers cultivating various commodities) in three Indian districts, Sharma (2008) argued that contracting positively influenced crop productivity and improved farm income. Being a member of a farmers' organisation increased the likelihood of participation in a contract scheme (Sharma, 2008). Narayanan (2012, 2014) explored multiple commodity sectors in India, including gherkin, papaya, marigold and broiler

supply chains and offered some valuable insights. The study emphasised the importance of personal relations in contract arrangements since results showed that parties perceived contracts as relationships rather than legally binding agreements (Narayanan, 2012). Furthermore, the 'moral economy' of contracts occurred in studied examples as a transgression where extension officers offered their assistance to farmers not exclusively related to the contracted crop but also regarding good practices for the non-contracted crop (e.g. the use of pesticides) (Narayanan, 2012). In turn, farmers were keener to fulfil their obligations and companies were able to rely on repeated interaction with farmers over a long term to decrease contract breach (Narayanan, 2012). Farmers in the papaya and broiler sectors achieved clear net gains from contracts (Narayanan, 2014).

Goel (2013) studied formal written contracts between PepsiCo[32] and basmati rice farmers in Punjab. PepsiCo offered technical training free of charge and supplied quality seeds to farmers. Farmers increased their income due to better productivity and price received. In their contract, PepsiCo included the clause that allowed farmers to sell their crop to other companies if PepsiCo prices did not satisfy farmers' expectations or were below the market price. Such a clause in the contract was PepsiCo's response to government regulation that encouraged companies to offer conditions where farmers can realise higher returns if the market price exceeds the contract price (Goel, 2013).

Studies in India and Sub-Saharan Africa showed that contract farming increased income and productivity, and decreased uncertainties for contracted farmers. Narayanan (2012, 2014) highlighted ideas on the mutual relationship and communication in contracts, which is in accordance with Masuku (2009) and Rüsch *et al.* (2013). PepsiCo took an additional step by introducing the clause that gives the farmer a right to seek better returns outside the contract. Since the provision was encouraged by government regulation, the PepsiCo example sheds new light on contract formulation and the possible role that government (and the enabling environment) can play in regulating the power in contracts.

[32] PepsiCo is the second largest world's food and beverages company.

4.4.8.3 Latin America

According to Saenz and Ruben (2004), contracted production of chayote in Costa Rica was profitable for farmers as contracts decreased uncertainties, granted access to credit, inputs and information, and enabled the increase of crop quality due to better land use. Farmers who received technical assistance and credit showed great loyalty; thus, Saenz and Ruben (2004) concluded that contracts positively influenced participation of small-scale farmers in international market chains. Farmers cultivating export vegetables and grains in Mexico had secured markets and received technical assistance and credit through contracts (Echánove and Steffen, 2005). Furthermore, in Nicaragua, the Walmart contract systematically reduced price volatility for contracted farmers (Michelson *et al.*, 2012). For oilseed farmers in Brazil, contract farming represented a valuable economic tool as contracts secured the market, increased average annual revenue per farmer by 600% and provided free technical assistance (da Silva Júnior *et al.*, 2013). Fromm (2013) posited that although contracts offered higher prices and thus improved incomes for cocoa farmers in Honduras, it is the investment in training (namely promoting awareness on quality, good practice and environmental issues among farmers) that will have long-term positive effects. The success of contracting and the cocoa sector in Honduras was a result of joint efforts by local and international, public and private organisations working together to support farmers (Fromm, 2013).

Another example from Honduras where farmers cultivated Asian vegetables under contracts warrants attention. Contracting increased farmers' gains and a successful trade of Asian vegetables on the American market brought diversification inside the industry (Imbruce, 2008). Farmers were able to strengthen their position and demand from buyers to abandon written contracts, adjust their policies and allow farmers to collaborate with more export buyers at the same time. Imbruce (2008) noted that buyers showed willingness to answer farmers' demands.

The evidence from Latin America added another relevant piece to understanding the contract farming system. While Fromm (2013) advocated for greater collaboration of supply chain players to achieve successful contracting, the case described by Imbruce (2008) has similarities with the PepsiCo example. In both cases, an external factor (government and success of the market) prompted the contractor to reconsider

the contract and award farmers with better conditions. The question remains whether dismissing written contracts (Imbruce, 2008) can strengthen or weaken farmers' position in the long-term as there is no guarantee for any commodity market to remain unchanged and/or profitable for too long. Production without contracts will be efficient in the situation of high demand for the commodity, limited supply, high prices and numerous interested buyers. In this case, farmers will have a better position than buyers will and might even dictate the price. As the market starts to develop and if the interest for the commodity continues to be high, it is likely that suppliers from other countries (e.g. China and India) will enter and offer either better quality or lower prices to buyers. Thus, the production without any agreement and coordination might be uncertain.

4.5 The Case *Pro* Contract Farming

Based on the elaborated literature, this section summarises circumstances where contract farming represents an appropriate solution for addressing challenges in modern agri-food supply chains in the context of developing countries:

(1) Substantial share of small-scale farmers in agricultural sector

Small-scale farmers make a reasonable choice for contract farming due to their advantages in labour efficiency and consequently decreased costs of monitoring. Developing countries without industrial force and with a predominantly rural population that depends on agriculture might exploit contract farming to empower their small-scale sector. Contracts are potential tools for commercialisation of numerous rural households as contracting improves food security and contributes to the country's economic growth through increased productivity and trade of agricultural commodities. Contracting can revive the small-scale sector by providing an opportunity for vulnerable groups of farmers, such as women-headed households and youth.

(2) High entry requirements for lucrative export commodities

Contract farming is especially suitable for export cash crops that require technical know-how, specialised inputs, must comply with stringent standards and have a high price on the market as this will secure comparative advantage and profitability for

the contractor. For a developing country with available land and climatic conditions to produce a lucrative export commodity, contracts will provide a secure market channel and contribute to a country's exports. In addition, the contractor will direct the production processes and ensure that farmers gain needed knowledge and inputs, achieve appropriate quality and receive a premium price.

(3) Lack of input markets

Quality inputs are not always available in markets of developing countries. However, a lack of general input markets does not discourage contract farming since the contractor might acquire even greater control over production processes by securing inputs from reliable international sources. In this sense, lack or low-value inputs will not threaten the quality of the final product. The contractor might offer seeds, fertilisers, pesticides and chemicals to farmers and overcome the major constraint to their higher productivity and quality.

(4) Existing enabling environment

As shown in the literature, the success of contract farming can be increased if stakeholders collaborate. Contractor's transaction costs might significantly decrease when farmers are organised in groups and deliver larger quantities of the product at once. Also, farmers' groups serve as a safeguard for farmers' interests and contribute to the fairness of the contract. Linkages with NGOs and government bodies may secure useful subsidies for the contractor and farmers. Where NGOs work with farmers' groups on improving their livelihoods, a contractor can offer a market for commodities and stable incomes. The presence of contractors might open the dialogue with government bodies for forming public-private partnerships.

(5) Sound legal framework and government regulations

The contract is legally binding agreement and requires appropriate legislation to operate. Sound legal framework and government regulations regarding the trade (especially export of commodities) ensure the rules of the game. In contrast, the absence of legal support and regulations for contract farming might leave both buyers and farmers in an unfavourable position (e.g., the contract enforcement is not possible in the case of contract breach, and the aggrieved party cannot be indemnified). Well-established long-term contracting schemes can prompt

governments to draft strategies for regulating relations in the contract and thus protect the position of farmers against exploitation. On the other side, contract schemes might encourage policy adjustments to facilitate making business in developing economies (e.g. reducing entry barriers for foreign businesses or providing reduced taxes for companies contracting with vulnerable farmers).

4.6 Summary

This chapter introduced the key themes needed for understanding contract farming: the main debate, factors triggering participation, recent research directions, legal side, recommended practices for contracting, and the positive impact that contracts have on farmers. Empirical studies on contracting in Sub-Saharan Africa, India and Latin America provided evidence to support contract farming as a promising solution for modern agri-food supply chains. Chapter 5 further challenges contracting by exploring the key difficulties in contractual arrangements.

Chapter 5 Challenges in Contractual Relations and their Impact on Small-scale Farmers

5.1 Introduction

Chapter 5 introduces some of the challenges related to contracting. The chapter treats the topic in two parts. The first section looks in-depth at challenges in the contract design and, by providing evidence from real contract clauses, it demonstrates pitfalls hidden behind the vague or unfair formulation of clauses. The second section focuses on challenges in contracting practice found in the literature. The final section of this chapter discusses the future of contracting: is it going to vanish, evolve or expand?

5.2 Key Challenges in Contract Content

Designing a contract is complex (Bogetoft and Ballebye Olesen, 2002). The previous chapter discussed contract design and best practices recommended by the Legal Guide (2015). The first section of this chapter reviews the literature on reported challenges in contract farming relations emerging due to poorly designed contracts.

Based on the existing literature, it is argued that the vagueness, lack of reciprocity and transparency and incompleteness represent the key challenges in the contract content.[33] Pultrone (2012) made a strong claim by stating that benefits from contract farming can diminish if the contract offers unclear, incomplete and misguiding contract clauses. Katz (1990), Vavra (2009) and Melese (2012) emphasised that contracts are often not completely understood by all parties (especially small-scale farmers) and the source of misinterpretation might be the high level of technical legal language used. Narayanan (2012) questioned whether farmers comprehend commitments they are undertaking by signing the contract.

Vagueness in the contract leaves space for various interpretations, which can be used as a strategy to force contract terms to favour the circumstances of the stronger party in the contract. The lack of reciprocity and transparency can result in exploitative contracts. For instance, da Silva (2005) noticed that companies might avoid transparency in one of the most important parts of the contract, i.e. price

[33] Note that a Legal Guide (2015) warns especially against stated challenges.

determination mechanism, and thus arbitrarily impose quality and quantity measurements to achieve the highest gains while farmers do not receive their share of benefits for delivering quality produce. Reciprocity in the contract should reflect the power balance between parties, but contracts are often concluded under unequal negotiation power (Cotula, 2011). This raises doubts in the capacity of the initial intention to achieve a win-win situation in the case of contracting (Smalley, 2013). Singh (2002) provided an example where farmers under the contract faced inequalities, as they were obliged to deliver the produce to the company under all circumstances, no compensation was provided in the case of crop failure or *force majeure*, and the entire crop had to be sold exclusively to the company. In turn, the company protected itself from unforeseen obligations and did not take any liability for purchasing the farmers' crop (Singh, 2002).

The most adverse scenario for farmers is where the contract is incomplete or silent on relevant clauses. Incompleteness can be observed in two cases. First, a contract is considered incomplete if it does not contain a certain clause. Second, although a clause might be present, the way it is formulated might prompt further questions, such as how to execute the content of the clause or how to act if different conditions occur. In this sense, Prowse (2012) argued that companies often fail to incorporate even basic information in the contract, leaving farmers without an accurate idea of the nature of the arrangement they signed. The author further stated that farmers are rarely aware of the fact that by signing the contract, they might be giving their rights over the crop to the company or that, as farmers, they have to acquire a legal title over the land where the contracted crop is grown (Prowse, 2012). Some contracts might not provide the clause on exact duration or will not specify intended inputs (ActionAid, 2015). Incomplete contracts can shift an excessive risk to farmers by relying on their low economic power, lack of legal protection and limited knowledge on contract matters. The following sections present how stated key challenges reflect in the contract content and how they impact small-scale farmers.

5.2.1 Input provision

Inputs are one of the most important benefits available through the contract for small-scale farmers (Legal Guide, 2015). In some cases, production without specialised quality inputs is not possible (e.g. production of hybrid varieties or seed

production). The provision of inputs via contract varies significantly from case to case. The major challenge in defining an input clause in the contract is an explicit specification of: (i) which type(s) of inputs will be provided, (ii) how much of each input will be provided and (iii) what is the price (or method of paying) for each input. While most contracts will sufficiently define how small-scale farmers should repay their inputs, types and quantities of inputs might be vaguely determined. For small-scale farmers, the impact of vaguely defined input clause may be reduced ability to produce agreed quantities and hence becoming liable for delivery failures. Pultrone (2012) argued that in the cases where farmers have weak economic power, the reliance on inputs is considerable as farmers' production of agreed quantities and quality of the product depends on the contractor's input provision.

5.2.2 Defining Quantity

Companies rely on supplied volumes of the crop for their further marketing actions. Thus, defining expected quantities allows the company to plan the amount of crop ready for trade. The quantity clause can be manipulated by the contractor to accommodate market conditions and reduce the contractor's risk of oversupply (Will, 2013). For instance, the company might link the quantity it is willing to purchase to the order received from the next buyer. This imposes a high risk on small-scale farmers. The small-scale farmer might have invested in inputs and equipment to produce high yields and quality crop, but the company might decide to purchase only part of the delivery. Also, the small-scale farmer will have to find another buyer for the crop, which increases transaction costs. If the new buyer usually purchases the crop in a slightly different form (e.g. whole pods instead of de-seeded), the small-scale farmer might have to sell a downgraded crop for a reduced price. Depending on the crop and perishability, the quality might decrease with days, so initially grade A could become grade B by the time the small-scale farmer reaches the new buyer.

In other cases, the company may define that the '*whole production*' or '*whole production from agreed hectares*' will be bought from the small-scale farmer. Both options carry certain pitfalls. If the company purchases the whole production, then the small-scale farmer has a guaranteed outlet for the crop. In order not to breach the contract, the farmer is obliged to sell all volumes to the company, even if the market

price is significantly higher than the company's price in a given period. The option to deliver the whole production from specified number of hectares puts the contracted farmer in a better position as it technically allows the farmer to supply excess to another buyer unless specified differently in the contract (see Sykuta and Parcell, 2003). However, the company might have pre-determined minimum volumes that are supposed to be produced from agreed hectares and could measure farmers' delivery against such criteria with the intention to remove small-scale farmers that underperform from their suppliers' list. The greatest challenge with defining the quantity clause is the precise statement on (i) how much volumes are expected from the farmer or how much the company is willing to purchase and (ii) what are the options for selling excesses from production.

5.2.3 Quality and Grades

It is argued in the literature that clauses on quality and grades in the contract are sensitive to manipulation and often cause disputes between the company and farmers (Glover and Kusterer, 1990; Eaton and Shepherd, 2001; Echánove and Steffen, 2005). Vague or unfair quality and grades clauses either do not sufficiently define parameters that the company will use to determine the quality of commodities or grant the right to the company to have a final decision in classifying a commodity into a grade.

There are three main reasons why the company might want to control these clauses. First, by arbitrarily controlling the classification of commodities, the company might downgrade some proportion of the high-quality commodity into a second grade to obtain more quality products at a lower price (Baumann, 2000). Second, the price of the commodity on the market might be lower, and the company could be tempted to supply the produce from the open market or export; thus, the company may 'invent' rigour quality standards and reject small-scale farmers' commodity (Minot, 2011; Pultrone, 2012). Third, the market for the commodity might be saturated, and to reduce its risk of buying contracted commodity with an uncertain further market, the company might raise the quality standards to create a barrier for farmers' produce with an intention to reject it (Imbruce, 2008). Thus, the biggest challenges in the case of quality and grades clauses are: (i) a clear definition of standards that will be

applied when classifying commodity, (ii) the transparency in the classification process and (iii) compliance with stated standards in all circumstances.

5.2.4 Price

The pricing clause can be considered as the single most important clause in the contract since it determines the logic behind the amount that will be paid to a small-scale farmer for delivered produce. This clause also reflects benefits distribution, i.e. whether the contractor awards the premium price. From all contract clauses, the price clause is often subject to changes due to its link with market conditions. Some studies report on three main problems related to the price in the contract. First, the company may outline the pricing mechanism in the contract; however, the pricing formula might be too complex, and the real extent of the price premium for the farmer can be disguised (Hamilton, 1995; Pultrone, 2012). In addition, farmers rarely participate in price determination and their bargaining power is often reduced as they cannot assess if the price paid represents an appropriate remuneration (Echánove and Steffen, 2005; Bijman, 2008). Second, in some contracts, the price clause is omitted, or it is left to be determined according to the prevailing market price. Sykuta and Parcell (2003) noticed that, if a contract does not specify the price, then it also does not reduce price uncertainty for the farmer.[34] In cases where the price is not stated and is left to be shaped by the market, the company might closely track market trends[35] in order to set delivery dates to favour low prices (da Silva, 2005). Third, consequences of inadequate price defined and paid to farmers via contract might be either side-selling or abandoning production of that commodity (Baumann, 2000).

Since the price is often determined by the contractor and without farmers' participation, there is another relevant aspect of this clause that increases uncertainty: the time frame when the exact price becomes known to the farmer. If the price is defined in the contract at the time of signing (and it remains the same), the farmer

[34] One of the motivating factors for entering the contract from the farmers' point of view is secured price (see chapter 4).

[35] In most cases, the price of the commodity is lower immediately after the harvest as it is assumed that in this period the market abounds with the commodity. Farmers, especially poor small-scale farmers, want to sell their commodity as soon as possible since they lack funds to secure food for their households. However, if the farmer is capable of storing and maintaining high quality of the commodity to sell it a bit later, then the price will increase as the demand will still be present but the supply will be scarce.

will be able to plan potential income and adjust the strategy for securing a livelihood. If the price is not defined at the time of signing the contract and it is announced a few days before or after the harvest, the farmer might not have sufficient time to balance the gap between the expected and offered price. Thus, the farmer might turn to opportunistic behaviour. Gergely and Diallo (2011, p. vi) suggested that the price mechanism in the contract should be '*as simple and understandable by producers as possible […] based on verifiable and non-manipulative data […] not be disconnected from world prices, but should also result in a fair distribution of risks and profits between producers and […] companie*s'.

5.2.5 The Terms of Payment

The terms of payment are an extension on the price clause and define how the payment process and monetary obligations will be executed. The payment clause is important to farmers for several reasons. It defines when the farmer will receive the payment. Also, this clause might state the form of payment, e.g. cash or bank cheque.[36] If the farmer received any inputs through the contract, the payment clause could specify whether the amount will be deducted from the final price or the farmer will pay for inputs in advance. Similarly, if the farmer obtained credit from the contractor, the interest rate is likely to be defined in the payment clause.

There is one particular challenge linked to the payment clause. The clause might define that the payment will occur upon delivery of the product to the company. However, it may not define the exact time frame acceptable for the payment to be performed. If the company does not clearly state the time frame, then farmers cannot claim their right to compensation if the payment was not made during the indicated period.[37] This situation favours the company as it reduces its responsibility to make prompt payments. For small-scale farmers, especially the vulnerable ones, late or delayed payments might have consequences for their household's food security status.

[36] In most cases, the contractor will pay in cash to small-scale farmers, but exceptions are possible.
[37] This example is compared against the characteristic of a fair contract where the company obliges itself to pay the farmer within a clearly stated period and, in the case of delays, the company takes the responsibility to indemnify the affected party.

5.2.6 Breach of Contract

The breach of contract terms and conditions can occur on the company's and farmers' side. The most significant challenges in designing the breach clause are the (i) definition of what is considered as a breach and consequently (ii) distribution of responsibilities once the breach is determined. If the contract does not state which actions are considered as a breach, there is a possibility that the stronger party will manipulate with terms and proclaim a breach arbitrarily when suitable. On the other hand, both parties might exploit the omission of the breach clause in the contract and exercise harmful actions (e.g. delaying the payment or side-selling). From the reviewed contract samples, it was observed that the following actions might be characterised as a breach of contract: the use of chemicals that have not been approved by the contractor,[38] failure to follow prescribed production procedures,[39] side-selling,[40] misuse of provided technical and financial inputs,[41] unjustified rejection of produce,[42] failure to secure safe conditions for workers and the use of child labour,[43] failure to supply the agreed product,[44] failure to pay the agreed price[45] and failure to repay loans.[46]

The impact of a contract breach on small-scale farmers is considerable. If the contract allows the company to breach the contract by delaying payments or rejecting the purchase without the obligation to indemnify the small-scale farmer, it is likely that the small-scale farmer will suffer financial consequences, such as the lack of funds to cover the household's needs or the loss of planned gains from the contracted production. In addition, if the contract prescribes penalties for breaching the contract, e.g. for the late supply or the use of certain chemicals, the small-scale farmer might have to pay the fee to the company and/or the entire delivered produce could be rejected, which will increase small-scale farmers' transaction costs, threaten income generation and potentially jeopardise future relations with the company.

[38] FAO (2016) Contract sample 4, 9 and 22.
[39] FAO (2016) Contract sample 4 and 22.
[40] FAO (2016) Contract sample 10, 11, 12, 16, 22 and 23.
[41] FAO (2016) Contract sample 14.
[42] FAO (2016) Contract sample 22.
[43] FAO (2016) Contract sample 23.
[44] FAO (2016) Contract sample 22 and 24.
[45] FAO (2016) Contract sample 24.
[46] FAO (2016) Contract sample 5.

5.2.7 Contract Termination

There are two frequent reasons for contract termination.[47] The contract might terminate as a result of a natural sequence after the indicated period of the contract duration has expired and both parties agreed to end their relationship amicably. The termination can be a consequence of a contract breach, meaning that one party requires termination of the contract because the other party violated contract condition(s). The second case is of interest here since challenges involve (i) the design of the termination clause that will give an equal right to parties to terminate the contract, (ii) allowing sufficient time for the other party either to try to correct the action that caused the termination or to prepare for exiting the contract and (iii) regulating current liabilities (e.g. loan repayment).

There are two main types of contract termination: unilateral and bilateral. In unilateral termination clause, the contract usually gives the exclusive right to the company to terminate the relationship (Pultrone, 2012). The unilateral termination clause might allow the company to end the agreement without any reason or if the company estimated that the farmer breached the contract. The farmer may not have the right to complain to the third party, e.g. a mediator or arbitrator. The consequences of unilateral contract termination for the small-scale farmer are similar to the case of contract breach: the farmer can be held liable for paying penalties, the purchase of the commodity is cancelled, part or whole planned income might be lost, and the small-scale farmer could be asked to repay debts to the company instantly.

In contrast, a bilateral termination clause recognises both parties' right to terminate the agreement. The fact that small-scale farmers can freely exit the contract if they believe the company is breaching agreed terms or they got another business opportunity (e.g. more lucrative market) makes for a more balanced contract. Also, a bilateral termination clause could prompt the company to adhere more to its commitments to maintain the supply base and especially if the termination clause involves paying fees to farmers.

[47] Besides the stated two reasons here, a less frequent cause of contract termination is *force majeure*.

5.2.8 Dispute Settlement

The dispute clause serves to regulate the procedure in the situation of conflict[48] between parties. The key challenge in contract farming is to (i) define a dispute settlement clause, (ii) secure transparent and fair process and (iii) determine appropriate and legally valid mechanism. There are three levels of dispute resolution mechanisms that are often used in agricultural contracts. The first level involves resolving the conflict solely between parties in an amicable manner, and this represents an optimal outcome of a dispute. If parties cannot reach a consensus in their dispute, the next step is mediation. Mediation includes a third person (mediator) who acts as a neutral third party and assists parties to resolve their dispute but does not have the authority to impose the agreement or bring the final decision (Silbey and Merry, 1986).

The dispute settlement clause in the contract should clearly propose in advance who will be assigned as a mediator and both parties should agree on the choice to avoid potential biases towards one party. For instance, if an assigned mediator is the village chief, it is likely that this person will favour farmers. In contrast, if an assigned mediator is a financial institution where the company has its accounts, it is possible that the mediation process will be leaning to support the company's side. It is assumed that, if the company drafts the contract, it will attempt to suggest the mediator that will protect the company's interests, which might leave small-scale farmers in a worse off position, especially if the contract cannot be negotiated. To avoid this unfair position, some contracts prescribe the arbitration (third level mechanism)[49] if the amicable settlement fails.

[48] The situation of conflict might include, but it is not limited to: failed negotiation over the price in the contract, disputes over the grading process, delays in the delivery or payment and disputes over the interest rate for the loan.

[49] The mentioned three levels of dispute mechanism in agricultural contracts are scheduled according to the authority of the third party and represent a so-called Alternative Dispute Resolution (ADR) (Bennett, 2002). ADR refers to any process for settling disputes outside traditional legal procedures (Minot and Ronchi, 2014). While amicably resolved disputes do not involve any other party outside of the contract, mediation and arbitration do. The mediator has a facilitating role and no legal power. Arbitration involves a binding decision and, to a certain extent, guarantees that parties will be treated equally.

In the case of disputes, arbitration might be chosen instead of litigation[50] and the usual procedure involves information-gathering, briefings, testimonies, and decision-making by the arbitrator(s) that is reviewed by the court to confirm or vacate the arbitration award (Bennett, 2002). The contract using arbitration should also indicate the applicable law that is guiding the process. Legal Guide (2015) confirms that dispute settlement clause is among the ones most prone to manipulation in agricultural contracts. Pultrone (2012) further connected the importance of clear definition of both the dispute settlement clause and the law guiding the contract by suggesting that the contract should be explicit on which national law will govern the dispute settlement if parties come from different countries. One consequence of the arbitration process might be a long-term distortion of relationships between the company and farmers in the area, which could reduce trust and affect the efficiency of a supply chain. Thus, settling disputes in an amicable manner is considered as a priority provided it satisfies both parties and not only the more powerful one.

5.2.9 Force Majeure

The *force majeure* clause is not always present in contracts despite its importance in defining (i) responsibilities for losses occurred, (ii) liabilities for remaining obligations and (iii) the future of the contract (termination or continuation). If the *force majeure* clause is not defined, it can be implied that risks and responsibilities associated with unpredictable events are borne by the farmer (Echánove and Steffen, 2005). Unless indicated, it cannot be predicted whether parties will be responsible for meeting remaining obligations and if the contract will be terminated in the case of *force majeure*. By omitting the *force majeure* clause, the contract could become vague. This is particularly relevant in circumstances of developing countries, such as Malawi, that often experience adverse climate conditions and where the insurance of agricultural commodity against *force majeure* is not accessible to vulnerable small-scale farmers. The damage that the small-scale farmer might incur due to *force majeure* is likely to jeopardise the household's food security as the contracted commodity may not be available for sale; hence, the income source is lost. In addition, if the contract does not recognise *force majeure* as a state of emergency and

[50] Litigation is a legal action or an action '*contested in court; this involves a claim, dispute or conflict, and the use of a specific institution, the court, to resolve the conflict or dispute*' (Friedman, 1989, p. 17).

requires from the small-scale farmer to either deliver the contracted commodity or indemnify the company for their losses, the small-scale farmer is likely to face indebtedness.

This section elaborated on challenges in contract content and their impact on small-scale farmers. A general conclusion can be made that the contract design determines roles, responsibilities, risks and benefits distribution in contractual relationships. Many challenges in contract farming might be mitigated at the initial stage – while writing and negotiating contracts.

5.3 Key Challenges in Contracting Practice

Little (2014) noticed that while contract farming creates an impression of a modern and progressive business model, which can attract investments from state and donor agencies, there also exists a different side of contracting. This section continues with exploring contractual relations with an aim to outline key challenges in contracting practice found in the literature.

5.3.1 Farmers' Loss of Autonomy and Shift of Traditional Production Patterns

Reardon and Barrett (2000) and Kirsten and Sartorius (2002) found that contract farming takes the authority of decision-making regarding production processes away from the farmer and directs it downstream in the supply chain towards the company. In this sense, the farmer loses the autonomy and control over its production (Weatherspoon *et al.*, 2001; da Silva, 2005; Will, 2013). In addition, the farmer might form a sort of dependency on the contractor (Prowse, 2012).

Since the farmer is no longer in complete control of his/her a land, contract arrangement tends to impose rules on what and how to cultivate (da Silva, 2005; Smalley, 2013). Thus, contracting shifts traditional production patterns towards export-oriented and cash crops at the expense of local food crops (Singh, 2002). Because of decreased food crops cultivation, the price of food increases and makes local farming and non-farming households more vulnerable to the fluctuation of food supply and prices (Singh, 2002; Waning and Key, 2002). Woodend (2003) suggested that contract farming could lead to environmental degradation due to intensive use of

chemicals or employment of farming methods with harmful results (i.e. exhausting or mining the soil and cultivation of crops in an inappropriate area). Considering the loss of autonomy and shifted production patterns influenced by contract farming schemes, Smalley (2013) highlighted that farmers are often suppressed for the sake of rural development that favours high-value cash production.

5.3.2 Unequal Bargaining Power

In a contractual relationship, small-scale farmers are likely to have less bargaining power compared to the company (Ramaswami *et al.*, 2006; Poulton *et al.*, 2010; Cai *et al.*, 2014b). This stems from the available economic resources, access to information and knowledge, and legal protection, which are in the majority of cases distributed in favour of the company. As seen in the previous section that focused on contract contents, bargaining power plays an important role in defining contract terms. Due to their low bargaining power, small-scale farmers might have to accept unfavourable conditions (da Silva, 2005; Minot, 2011). Woodend (2003) stated that contract farming will never be equal for both parties unless the independent third party intervenes in the contract and small-scale farmers have secured protection. Furthermore, Will (2013) emphasised that the issue of prices and a company's default (e.g. delayed payments or unjustified rejection of contracted commodity) are sensitive to negotiation power of two parties; hence, small-scale farmers mostly receive depressed prices and are not able to claim their rights when the company breaches the contract. Small-scale farmers could increase their bargaining power by forming groups or joining associations that will represent farmers' interests in the contract arrangement (Baumann, 2000; Prowse, 2007).

5.3.3 Exploitation of Small-scale Farmers

One possible consequence of unequal bargaining power and weaker position in contractual relation is farmers' exploitation through the contract (Dhillon and Singh, 2006; Birthal *et al.*, 2008). The main critique of contract farming in the literature is that a contract serves as a company's tool for making profit; thus, the company takes advantage of farmers' poverty by using farmers as labourers that have low wages and carry high production risks (Minot, 1986; Runsten and Key, 1995; Warning and Hoo, 2000; Miyata *et al.*, 2009; Vermeulen and Cotula, 2010; Minot, 2011; Oya, 2012). Also, Woodend (2003) argued that contract farming results in a sort of self-

exploitative behaviour as small-scale farmers tend to exploit their unpaid family labour to comply with contract terms and conditions imposed by the company. Accusations of exploitation through contract farming will likely depend on the circumstances under which contracting is observed, however, the possibility that contractual arrangement could be exploitative must be taken into consideration when promoting contract farming through public policies. A sound legal framework and collective action that safeguards small-scale farmers' interests represent a significant barrier to exploitative contracts.

5.3.4 Imbalanced Relations in Households and Rural Communities

Contracts could upset the balance between genders in the household. Challenges occur due to the distribution of benefits based on performed work (Shepherd, 2007). In the traditional rural communities, the labour related to contract farming activities might be assigned to women, but the cash payments may be granted to men (da Silva, 2005). Women's role and interests in contract farming could be neglected and lead to tensions in the household (Prowse, 2012; Smalley, 2013). Also, Vermeulen and Cotula (2010) suggested that having longer contract arrangements might shift the land allocation from subsistence crops that are grown by women to more cash crops, which are preferred by men signing the contract. In some parts of Africa, women are responsible for care and feeding of the household but because men receive payments from contracted production, the household purchase of food and health related materials could be reduced (Minot, 1986). Imbalanced relations in households due to contract farming may be provoked by the set of cultural beliefs and tradition, yet sustainable contracting should insist on adequate rights for both men and women employed (Porter and Phillips-Howards, 1997).

While contract farming may create distortions in the household, it can also increase disparities in rural communities. For instance, if the company has contracts only with large-scale farmers in the area, small-scale farmers can be excluded from markets and even displaced from their farms due to increased demand for the land consolidation (Key and Runsten, 1999; Warning and Key, 2002). Exclusion from contracting will result in income inequalities between different groups in the rural area and may cause conflicts between members (Minot, 2011). Initially excluded small-scale farmers can work for richer capitalist farmers that captured lucrative

contracts, meaning that smaller farmers will have the status of labourers rather than independent farmers in the community (Porter and Phillips-Howard, 1997; Baumann, 2000; Vermeulen and Cotula, 2010). According to Eaton and Shepherd (2001), imbalanced relations in rural communities can be exacerbated if the farming calendar for contract farming obligations clashes with the timing of traditional and social events.

5.3.5 Information Asymmetry and Increased Transaction Costs

Contractual relations between the company and small-scale farmers involved asymmetric information and increased transaction costs (da Silva, 2005; Cai *et al.*, 2014b). On the one hand, small-scale farmers usually lack information on markets, prices and potential risks of contracting, which makes them vulnerable to possible exploitation (Minot, 2011; Jia and Bijman, 2013). On the other hand, small-scale farmers can use the information asymmetry to mask their side-selling before the company (Barrett *et al.*, 2012). Still, in both cases, asymmetric information will have long-term negative consequences for small-scale farmers under contracts.

So far in this study, transaction costs have been related to contract farming in a positive context, meaning that contractual arrangements tend to decrease company's transaction costs mainly because a steady supply eliminates the need for costly searching, screening and monitoring suppliers. Also, if a farmer has a known buyer for its commodity, the costs of finding reliable markets are decreased. While this is true mostly in the case of medium- to large-scale farmers, the literature suggests that the transaction costs of having contracts with a large number of small-scale farmers are high (Warning and Hoo, 2000; da Silva, 2005; Birthal *et al.*, 2008). For example, dealing with numerous small-scale farmers will increase costs of providing extension services, monitoring for pesticide violations and input supply (Kirsten and Sartorius, 2002; Shepherd, 2007; Vavra, 2009). Small-scale farmers are often dispersed, which adds to the costs of collecting commodities as the company has to cover a broad and sometimes difficult to reach geographical area (Prowse, 2007; Minot, 2011; Will, 2013).

Also, the costs of contract enforcement are higher with small-scale farmers (Birthal *et al.*, 2007c). Stated examples once more reinforce why modern agri-food

companies prefer to contract with larger farmers compared to small-scale farmers. However, small-scale farmers indeed show some significant advantages that are attractive to companies (see chapter 3). Barrett *et al.* (2012) argued that even though contracting with larger better-off farmers will decrease transaction costs the company might have to offer better contracting terms while the risk of non-compliance with contract terms could be even higher with larger farmers.

5.3.6 Risk of Indebtedness

Current studies describe two main reasons for small-scale farmers' indebtedness due to contracting. First, contract farming might require certain investments into equipment and facilities (Birthal *et al.*, 2008). Needed investments could be commodity-specific and have little flexibility to adjust for the production of other commodities quickly. Small-scale farmers who invested in their contracted production and are expecting the return on that capital investments through contracting might fall into indebtedness if the contract they have with the company is cancelled or only short-term and not renewed (Pultrone, 2012). Second, since contract farming opens the access to needed credit, the risk of indebtedness is increasing considering small-scale farmers' financial capabilities (i.e. high default on credit) and uncertainty of agricultural production (da Silva, 2005; Dhillon and Singh, 2006; Prowse, 2007; Will, 2013). The lack of opportunities for saving needed capital to finance contracted production independently (e.g. buying seeds and chemicals) coupled with poor financial management, might create dependency on company's credit and push small-scale farmers into a vicious cycle of indebtedness (Watts, 1994; Birthal, 2008). Companies could exploit farmers' indebtedness to subsequently offer lower prices (Minot, 1986; Jia and Bijman, 2013; Smalley, 2013).

5.3.7 Side-selling and Inputs Misuse

One of the most serious challenges in contractual relations that affect both small-scale farmers and companies is side-selling. Often called extra-contractual marketing, side-selling involves selling the contracted commodity to a third party, which is not part of the contract and did not provide any services to the farmer (e.g. input provision or extension services) or selling directly on the open market due to more attractive prices (Glover and Kusterer, 1990; Eaton and Shepherd, 2001; Echánove and Steffen, 2005; Pultrone, 2012). Shepherd (2007) provided a valuable

insight into the logic behind side-selling: small-scale farmers have limited opportunities for earning income and urgently need cash to meet the food needs of their households. The attitude of a small-scale farmer is to obtain the highest possible price for scarce volumes produced, and if the contract does not offer this option, a small-scale farmer will search and sell outside of the contract (Shepherd, 2007). Minot (2011) suggested that small-scale farmers can also side sell to avoid repaying inputs that they received through the contract.[51] Side-selling may have long-term negative consequences for small-scale farmers as the company is likely to dismiss defaulting farmers and even more – the future opportunities for the local community to engage in contracting might be forfeited (Groenewald *et al.*, 2012). Side-selling can prompt companies to supervise small-scale farmers more closely (and increase transaction costs) or even abandon contracting (Huh *et al.*, 2012).

Alternatively, Shavell (2009) argued that breaching of a contract might not always be immoral[52] due to contract incompleteness, i.e. some contingencies are not explicitly described in the contract. Applying Shavell's idea in the case of contract farming offers some ground to deepen the thinking about side-selling. Let us look at the example of a contract where the company offers inputs that farmers have to pay in cash and in advance. In this case, the company only serves as an input dealer compared to the cases where the input supply is much more dependent on the company due to the involvement of credit for inputs. If the contract does not define the exact price that will be paid to the farmer or at least some formula that will be used to calculate the final price, then the price clause can be considered as incomplete or vague. Thus, what Shavell (2009) suggests is that side-selling in the context of such a contract might not be necessarily immoral as the small-scale farmer does not have pending obligations towards the company (inputs are repaid) and the contract does not offer any information on the expected price, which in turn increases uncertainty and farmer's marketing risk. As an 'independent' economic subject, a small-scale farmer is entitled to act in the best interest of its commodity and financial outcomes; thus, selling the commodity for the highest price offered is

[51] This is the case with contracts that offer inputs, which are charged through deduction from the final price. Small-scale farmers know that if they sell the commodity to the contractor, the price received will be reduced for the cost of inputs. Hence, by selling the commodity outside the contract, small-scale farmers will receive a higher price. Nevertheless, they will be indebted, and the contractor could take a legal action against the farmer.

[52] The term 'immoral' in this context is understood as violating accepted principles of what is right.

considered economically rational. The problem with this thinking is, however, ignoring the fact that the small-scale farmer often does not have a production scale, resources or negotiation power to independently and continuously survive on the market. In contrast, larger farmers could have that power, and they might violate contracts more often without serious consequences (Barrett *et al.*, 2012). Therefore, while side-selling may not be entirely immoral in described conditions, it is certainly inefficient for the small-scale farmer in the long run as the risk of losing the source of quality inputs in the environment of poor input markets offers a sufficient reason to stick with selling the commodity to the contractor.

Besides side-selling, input misuse is another type of opportunistic behaviour that might occur in contractual relations. Since inputs are a valuable but scarce resource, small-scale farmers might use inputs received via contract and allocate them partially to other crops, typically food crops (Watts, 1994; Weatherspoon *et al.*, 2001; Jia and Bijman, 2013). Also, small-scale farmers sometimes sell inputs to gain an additional income (Prowse, 2007). By selling or diverting inputs away from the contracted crop, small-scale farmers are likely to have reduced yields, receive less income and jeopardise their relationship with the company (Eaton and Shepherd, 2001; Will, 2013).

5.3.8 Problematic Contract Enforcement

Appropriate contract enforcement is a pre-requisite for efficient economic transactions (Gow and Swinnen, 2001). In some developing countries, enforcing contracts might be difficult due to poorly developed and inefficient legal systems (Reardon and Barrett 2000; Kirsten and Sartorius, 2002; Guo and Jolly, 2008). North (1990, p. 54) took it further by stating that '*The inability of societies to develop effective, low cost enforcement is the most important source of both historical and contemporary underdevelopment in the Third World*.' In some cases, contract enforcement could be costlier compared to the loss resulting from the initial dispute and companies will avoid enforcing contracts despite frequent contract breaches (Imbruce, 2008; Narayanan, 2012; Minot and Ronchi, 2014). Because few contract disputes reach the court, the vicious cycle of violating contract terms with no legal consequences continues (Messick, 2005).

Kähkönen and Meagher (2001) suggested that the relative efficiency of contract enforcement mechanisms will depend on the good that is the subject of the exchange, the cost of enforcing mechanisms and predictability of the outcome. Still, authors point out that societies differ in their mechanisms depending on the history, culture and political system, and these factors might influence inefficiencies in developing countries (Kähkönen and Meagher, 2001). While Fefchamps (1996) found that public mechanisms were less relevant in enforcing contracts in Ghana compared to personalised relations based on trust, Messick (2005) and Thomas-Hawthorne (2008) advocated for formal contract law, third-party enforcement and private mechanisms to reduce problematic contract enforcement in developing countries.

5.4 Possible Future Trajectories of Contract Farming

Considering benefits and challenges of contract farming, there are a few possible scenarios on how this business model will be further developed within the conditions of the modern agri-food supply chains (chapter 3). This section briefly considers three future trajectories. First, there might be no need for CF once market inefficiencies are overcome. Singh (2007) observed that, in itself, contracting is only a temporary means for agricultural and rural development; thus, it will vanish when market failures are under control. Nevertheless, the author also noted that future of CF depends on the dynamics of the sector where it is performed. The idea that contract farming serves to correct market inefficiencies inevitably calls for further thinking on whether contracting is a system that has been around for a long time and - just like economies have their peaks and bottoms in cycles - CF gains its momentum when the economy starts its recuperation from poor conditions. The contracting might not phase out but rather remain at low levels during prosperous times just to be re-invented again when market inefficiencies occur. This could also be applied to one part of the economy – the agri-food industry that has been rapidly transforming over the past decades causing new co-ordination mechanisms to emerge (i.e. vertical integration) and adopting contract farming as one of its instruments.

The second option is that contract arrangements will evolve into more inclusive models. Kelly *et al*. (2015, p. ix.) described inclusive business models (IBM) as the ones that '*provide a living wage for vulnerable groups, use flexible trading*

arrangements, support farmers and small enterprises to establish a stronger negotiation position, build on the skills and expertise of existing market players, are scalable in medium term and allow diversified income stream'. The idea of IBMs obviously builds on the existing contract farming philosophy, but it also announces the era of fairer business models judging by the term 'inclusive'. Therefore, the CF might involve arrangements that will be more directly favourable for small-scale farmers and will strengthen their position in food supply chains.

Finally, contracting could increase. Kherallah and Kirsten (2001) and Miller (2003) stated that the rise in contract farming arrangements would be a result of a continuous need for increased vertical integration to secure stable and quality supply of the agricultural produce at a known price. Also, Jia and Bijman (2013) predicted that contracting in developing countries will increase with the emergence and spread of supermarkets. Finally, it is likely that all three options will simultaneously appear, as they are not mutually exclusive. In better off developing countries, contracting in its most basic form might decrease or evolve into inclusive business models. At the same time, for developing countries experiencing agri-food transformation in its full extent, contracting could increase and over time become more inclusive.

5.5 Summary

This chapter reviewed the literature on challenges in contract farming arrangements. Concerning contract design, the literature suggested that the formulation of the contract clauses determines the distribution of risks and benefits among parties in the contract. The challenges in contract farming practice are numerous and far-reaching for small-scale farmers. The following chapter 6 reviews socio-economic conditions, food supply chains and contract farming in the context of Malawi.

Chapter 6 Context of Malawi: Performance of Agri-food Supply Chains and Contract Farming

6.1 Introduction

Chapter 6 introduces the context of the study area. The first section reviews geographic and socio-economic characteristics of Malawi. The second section focuses on Malawian agriculture and the key challenges. The performance of agri-food supply chains in Malawi is explored in section three. The chapter further addresses contract farming, its emergence and characteristics in Malawi. The last section sets the scene for the study by examining the status of the paprika sector in Malawi through review of available literature.

6.2 Geographical and Socio-economic Characteristics of Malawi

The Republic of Malawi declared its independence from Great Britain in 1964 and officially became a republic in 1966. Malawi is a landlocked country located between 9° to 17°S and 30° to 36°E in southern Africa and surrounded by Zambia on the northwest, Tanzania on the north to northeast and Mozambique on the east, south and southwest and with population around 16.7 million (Figure 6.1) (Reynolds, 2006; FAO, 2014; National Statistical Office of Malawi-NSOM, 2015a; WB, 2015). Malawi's total surface area is 118,484 square kilometres and the country's border on one part of the east side is occupied by 571 km long Lake Malawi (Jury and Mwafulirwa, 2002; FAO, 2014; WB, 2016a). One of the major challenges for Malawi is the inefficiency of the transportation system since the country depends on transit corridors and ports of its neighbouring countries, which limits Malawi's export capacity due to high costs and long waiting time involved (WTO, 2016). Malawi is divided into three regions and 28 districts.[53] Northern Region consists of six districts, Central Region of nine districts and Southern Region of thirteen districts (FAO, 2014).

[53] Figure 6.1 shows 27 districts. One district (Neno) was created from the part of Mwanza district.

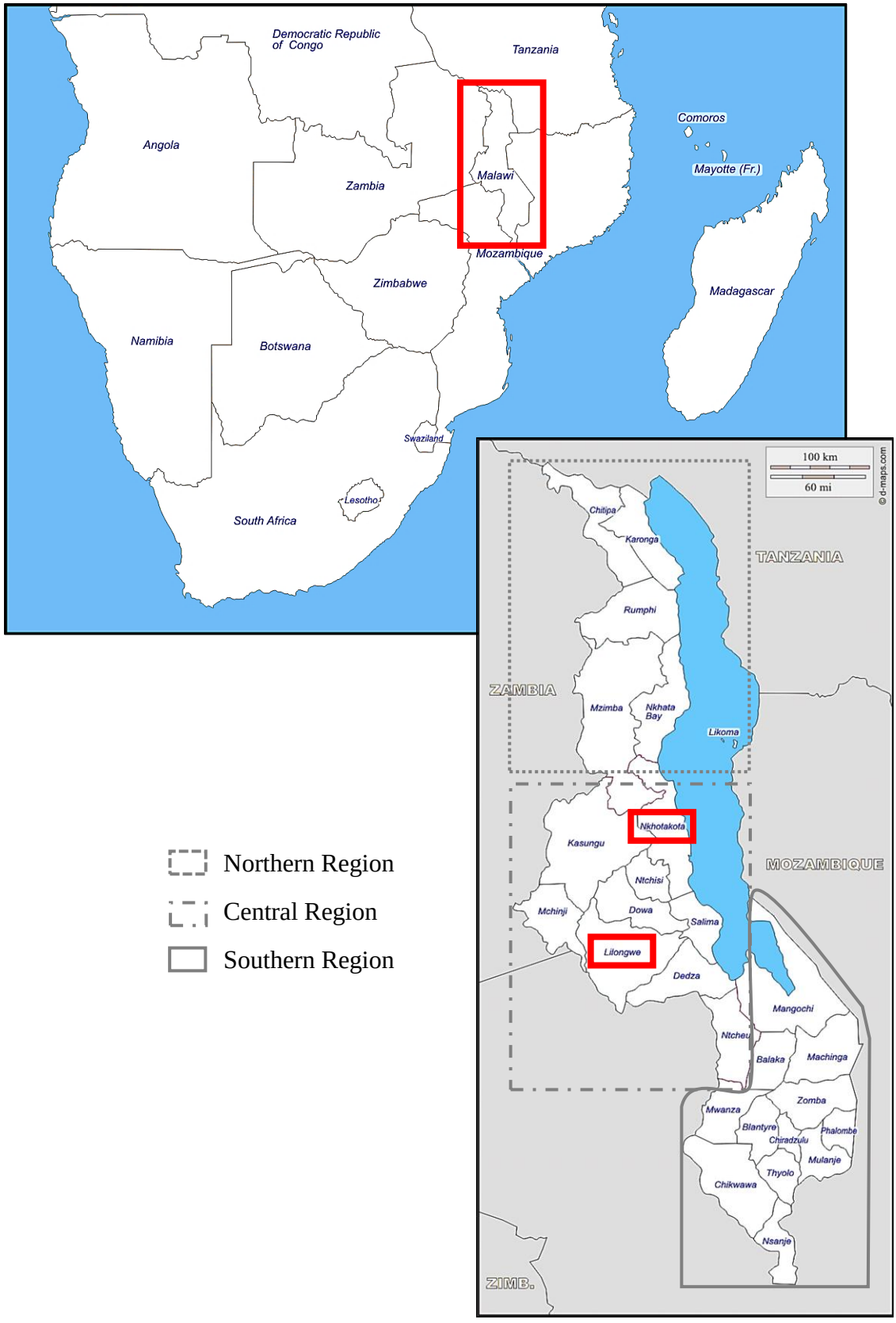


Figure 6.1 Location of Malawi in the Southeast Africa and the area of research

Source: d-maps (2016a, b).

Since 2011, the population of Malawi has been continually growing by an average rate of 8% in the 4 years' period (Figure 6.2). The rural population comprised 83.7% of Malawi's population in 2014, and 81% of males and 82% of females lived in rural areas (National Statistical Office: 2015-2016 MDHS, 2016; WB, 2016b). The urban population grew by 17.4% in the period 2011-2014, while the rural population increased by 12.2% in the same period (WB, 2016b).

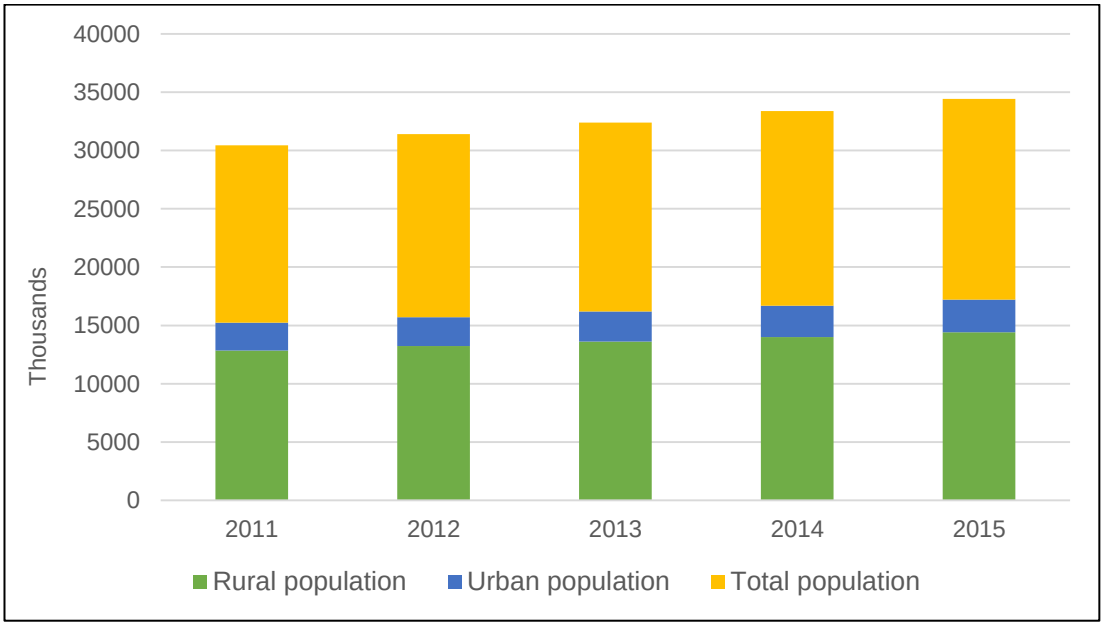


Figure 6.2 Trend in rural and urban population growth, Malawi 2011-2015
Source: Author's compilation from WB (2016b).

The Central Region, where the study took place, had 154 people per sq. km and the population of 5,510,195 (NSOM, 2015c). The male-female ratio in the country was 49:51 (Integrated Household Survey-HIS, 2012). Life expectancy at birth was 57 years for males and 60 years for females in 2015 (WHO, 2016). In the Central Region, there were around 1,222,365 households in 2008 with an average size of 4.5 people per household (NSOM, 2015c). Male-headed households had more household members (average 4.8) compared to female-headed households on the national level (average 3.8) (National Statistical Office of Malawi – MDHS 2015-2016, 2016).

In 2010, 61.31% of adult Malawians age 15 and above were literate (WTO, 2016). The overall literacy dropped by 2.82% in the period from 1998-2010 (WB, 2015). The male population experienced a greater decrease in literacy (-2.83%) compared to

the female population (-2.75%) (WB, 2015). On a regional level, the Southern and Central Regions had the same percentage of literacy (81.7%) (NSOM, 2015c) (Figure 6.3).

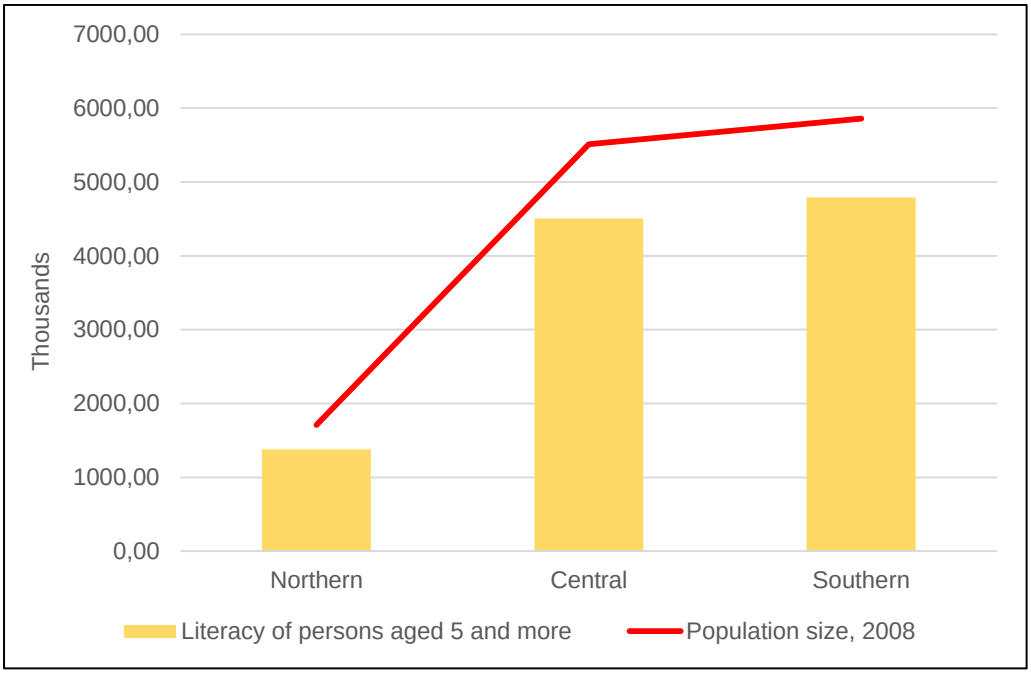


Figure 6.3 Literacy among the population aged 5 and above in 2008 by region
Source: Author's compilation based on NSOM (2015c).

Completion rates for primary and secondary level education increased in Malawi. In the period from 2005-2013, the primary education level increased by 38% and secondary education level by 65% (WB, 2015). In 2013, levels of both primary and secondary education for females decreased compared to 2010 by 0.11% and 0.04% respectively (WB, 2015). For males, levels of both primary and secondary education increased in 2015 by 0.11% and 0.04% respectively compared to 2010.

In 2010, around 87% of the population was living at less than $3.10 a day and almost 71% of the population at less than $1.90 a day (WB, 2015). About half of the Malawian population (50.7%) was living at the national poverty line in 2010 (WB, 2015). In terms of the poverty status in the urban and rural areas, 17% of the urban population was living at the national poverty line compared to 56.6% of the rural population (WB, 2015). Although the levels of poverty decreased from 1997-2010,

Malawi is considered as one of the poorest countries in the world. The minimum wage in Malawi is set at about US$ 1.12 per day (FAO, 2015b).

Malawi's GDP per capita annual growth has been unstable since 2005. In 2014, GDP growth was 2.5%, which was an increase of 0.48% compared to 2013 (WB, 2015). According to the World Trade Organization (WTO) (2016), GDP in Malawi will grow at around 4.5% in 2016 and then the growth will continue at rates of 5.5% in the medium term.

In Malawi, on average 35% of the state budget has been provided by external donors, which makes the country highly dependent on the external support (WTO, 2016). Also, the volatility of the national currency (Kwacha) makes the business environment uncertain (Figure 6.4).

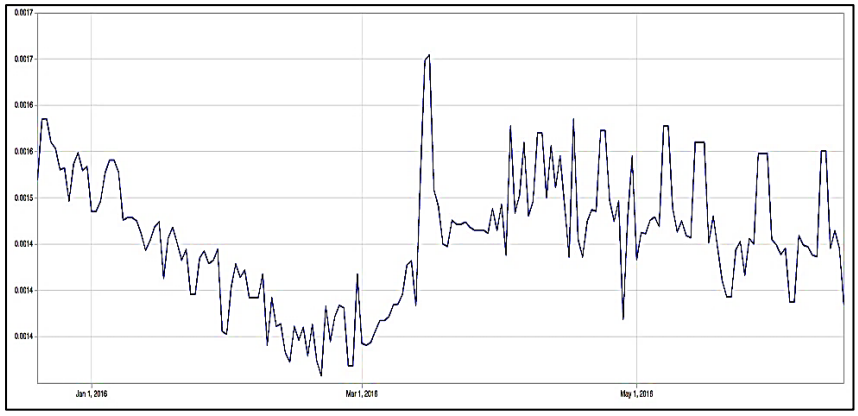


Figure 6.4 Volatility of Malawian currency (Kwacha), January-June 2016
Source: OANDA (2016).

In the period between 2013 and 2014, Malawi's annual import and export decreased by 2.32% and 8.58% respectively (WB, 2015). The considerable decline in exports could be attributed to poor weather conditions affecting agricultural production, which represents the driving factor of Malawi's export and economic growth.

6.3 Agriculture in Malawi

Agriculture is the most important sector in Malawi (MGDS II, 2011; Chirwa, 2011; Phiri *et al.*, 2012; Malawi Ministry of Agriculture, 2014; WTO, 2016). In 2014, agriculture contributed 33.3% to the national GDP (WB, 2015). Agriculture is a

source of livelihoods and food security for over 90% of Malawians, provides employment for nearly 80% of the total work force and accounts for around 75% of export earnings (CAADP Post Compact Review-PCR, 2010; FAO, 2014, 2015b; WTO, 2016). According to WB (2015), 69.9% of females and 58.5% of males are employed in agriculture. For poor rural people, agriculture is often the only source of income (Chirwa and Dorward, 2013). In 2009, Government expenditure for agriculture reached 39% of the national budget, which was a 25% increase compared to 2002 (NSOM, 2015). Concerning investments in agriculture, Malawi is considered to be below the average of other developing countries. In 2013, Malawi's Government invested USD 313 million in agriculture (FAO, 2015b). Beside the Government, various donors contributed to the development of agriculture in total USD 159.76 million[54] (FAO, 2015). Still, with around USD 473 million of investment in agriculture annually, it is likely that Malawi will struggle to respond to the expected growing domestic food demand in the coming decades. Frequent droughts and floods in Malawi often destroy crops and threaten the livestock, which contributes to food insecurity, indebtedness and poverty among Malawian farmers (FAO, 2016).

6.3.1 Climate and Land Characteristics

Malawi's climate is characterised as tropical with two different seasons: a rainy, warm season from October to April and a dry, cooler season from May to September (FAO, 2014; NSOM, 2015a). About 95% of annual precipitation occurs during the rainy season, with approximately 1,289 mm in Mzuzu, 900 mm in Lilongwe and 1,127 mm in Blantyre (Malawi Meteorological Service, 2006). The amount of annual rainfall has decreased in the 2013-2014 period in the Central and Southern Region, which might pose considerable challenges for the country's mainly rain-fed agriculture (NSOM, 2015a).

In the last two decades, Malawi experienced numerous natural disasters in the form of floods, droughts and rising temperatures that had an adverse effect on crop and livestock production (IALUO, 2012; FAO, 2014). Deforestation reaches high rates in Malawi (WTO, 2016). Poverty and population growth in Malawi are putting pressure

[54] Ireland's total investment in Malawi's agriculture in 2013 was USD 7.58 million (FAO, 2015b).

on available agricultural land and production capacities. In 2013, from the total country area in Malawi, 49% (5,790,000 hectares) was in use as agricultural land (FAO, 2015a). In addition, 27% of the country area was under forests, and only 1.2% and 15.6 % of the agricultural land was used for (i) permanent crops and (ii) meadows and pastures respectively (FAO, 2015a). Maize (58%), pulses (20%) and groundnuts (9%) occupied the greatest portion (number of hectares) of the agricultural land in Malawi in terms of food crops (NSOM, 2015b).

6.3.2 Structure of the Malawian Agricultural Sector

The Malawian agricultural sector is divided between profitable estates, which contribute less than 30% to the agricultural GDP and small-scale farmers who dominate and contribute over 70% to the agricultural GDP (National Agricultural Policy, 2011). There are around 3.5 million small farming households in Malawi that cultivate on average 0.5-2.5 hectares of fragmented land under customary land tenure using traditional cultivation methods (CAADP-PCR, 2010; Phiri *et al.*, 2012). Small-scale farmers usually practice subsistence farming to meet their basic needs, which includes growing food crops such as maize, cassava and sweet potato (National Agricultural Policy, 2011). In contrast, estates are focused on growing high-value export cash crops, such as tobacco, sugar, coffee and tea (National Agricultural Policy, 2011).

6.3.3 Main Crops Produced

Tobacco and maize dominate in Malawian agricultural sector (Figure 6.5). Maize is the national staple food, and it is grown by approximately 80% of small households (FAO, 2015a). Despite the fact that maize is widely cultivated, a high proportion of Malawian small-scale farmers do not produce a sufficient amount of food for their yearly needs and thus rely on market supply (Chirwa, 2011). Other important crops in Malawi include: rice, cassava, sugar, sweet and Irish potato, groundnuts, cotton and coffee. In terms of the paprika sector, production levels for chillies, peppers and allspice were in total 1,397 t (2011), 1,610 t (2012) and 1,587 t (2013) (FAO, 2015a).

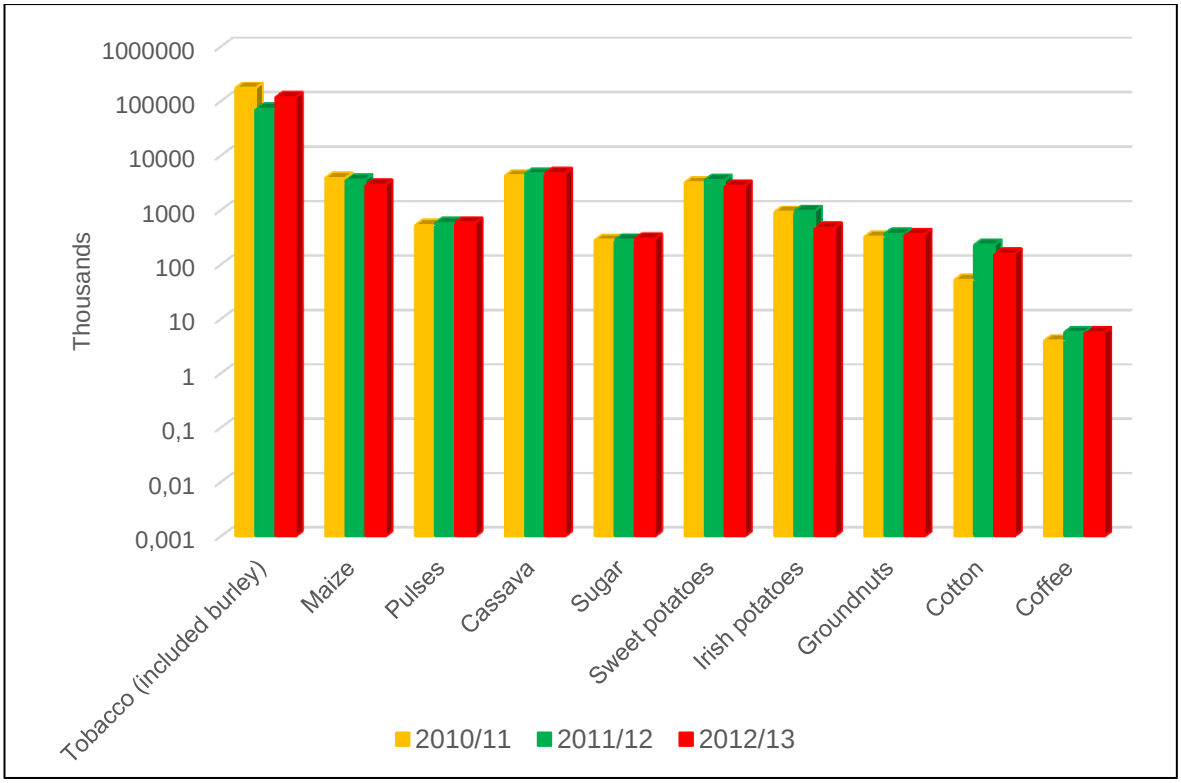


Figure 6.5 Trend in production of main crops in Malawi in mT, 2008-2013

Note: The graph displays logarithmic values with the base 10 for improved readability. Source: Authors' compilation from WTO (2016).

6.3.4 Main Export Crops in Malawi

A significant contributor to the positive trade balance is tobacco. With an export value of US$ 647,408 in 2014, Malawi was the world's 23rd tobacco exporter (NSOM, 2014). Tobacco has a long history of cultivation in Malawi, which dates back to the 1890s, and until today it continues to be the single most important export crop (Jaffee, 2003; Chirwa, 2011; FAO, 2015; WTO, 2016). Interestingly, although tobacco is a highly valuable crop, this sector is dominated by small-scale farmers, not by estates (Prowse and Moyer-Lee, 2014). Tobacco is followed by sugar, tea, cotton and coffee as the most important national export cash crops (NSOM, 2016b).

6.3.5 Institutional Environment for Agriculture and Trade in Malawi

Currently, Malawi's policy framework for sustainable economic growth embeds the rural development concept and strives to fight poverty and food insecurity directly through creating an enabling environment for the rural poor, rather than

making them more aid-dependent (Ellis, 2000; Ellis and Freeman, 2011; FAO, 2015c).

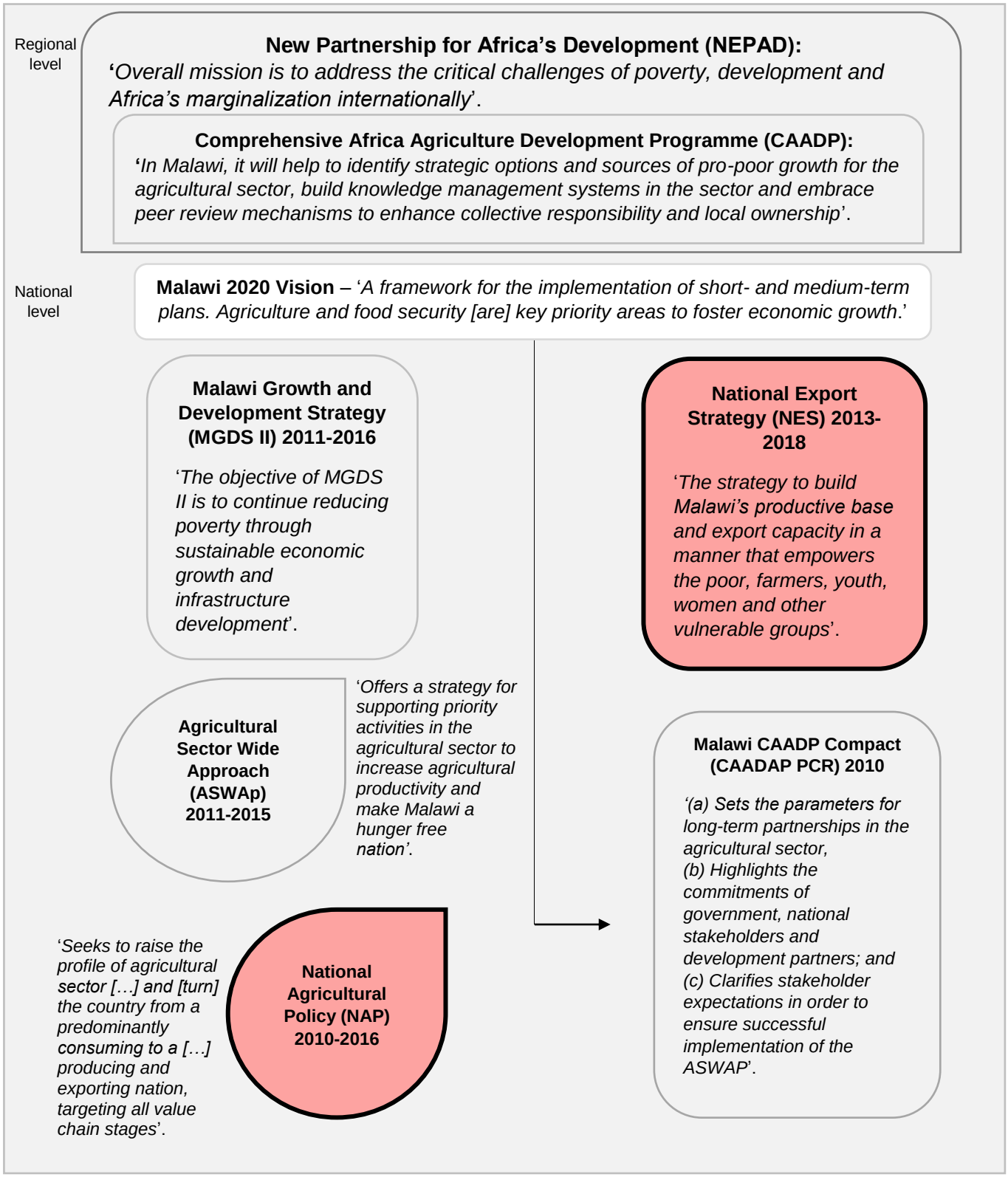


Figure 6.6 Summary of relevant policies for Malawian agriculture and trade

Source: Based on ASWAp (2011), FAO (2014, 2015b), Malawi CAADP Compact 2010 (2010), MGDS (2011), NAP (2011), NES (2012), UN (2015).

The policy is oriented towards reorganisation, commercialisation and broadening of small-scale farmers' participation to encourage production, processing, export, income generation, food security and rural development (Agriculture Sector Wide Approach, 2010; Malawi Growth and Development Strategy II, 2012; National Agricultural Policy Framework, 2011). The means of achieving goals include stronger association with the private sector and, in particular, promoting contract farming i.e. stimulation of smallholders through the well-developed inclusive supply chain and profitable contracts to induce their contribution on the market (CAADP, 2009). Despite a developed framework, the implementation of stated measures in addressing current challenges of Malawian agriculture remains a slow process. The main national and international policies guiding the agricultural sector involve NEPAD, CAADP, Malawi 2020 Vision, MGDS II, ASWAp, NAP, NES and CAADP Compact and are summarised in Figure 6.6. Malawi currently does not have guidelines or a strategy for contract farming, which makes it challenging to organise the relationship between companies and small-scale farmers in an efficient and sustainable manner.[55]

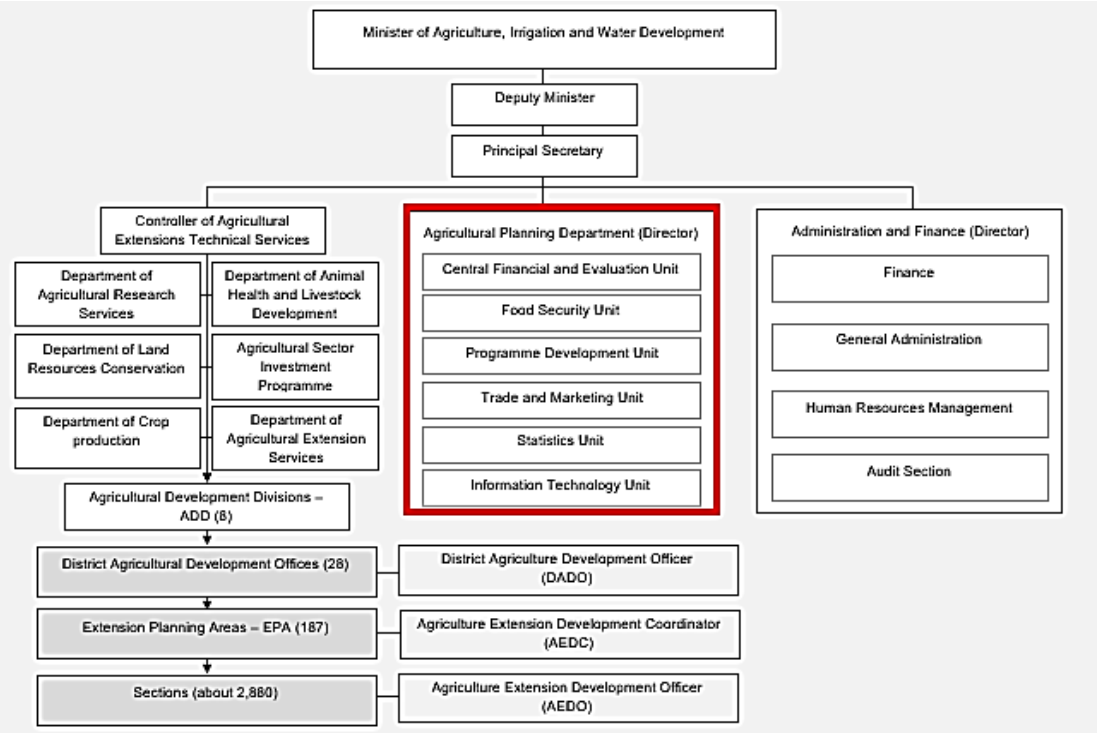


Figure 6.7 Ministry of Agriculture, Irrigation and Water Development
Source: Based on author's personal communication with the key informants and Phiri *et al*. (2012).

[55] See chapter 10 for more details.

The Malawian Ministry of Agriculture, Irrigation and Water Development (Figure 6.7) has responsibility for developing an appropriate institutional environment and plays a key role in advancing country's transaction of agricultural produce through contract farming.[56]

6.3.6 Key Challenges in Malawian Agriculture

Malawian agriculture faces numerous challenges, and the key issues are outlined as follows based on CAADP PCR (2010), MGDS II (2011), Phiri *et al.* (2012), Chirwa and Dorward (2013), Ministry of Agriculture (2014), FAO (2014, 2015b, 2015c) and WTO (2011, 2016):

(a) Overall Status

As stated, agriculture is the most important sector in the country, and Malawi is highly dependent on its agriculture. This creates pressure on land and the continuous increase in population results in small and fragmented landholdings with reduced capacity to produce meaningful volumes of agricultural produce. Malawi's agriculture is mainly rain-fed, and the irrigation system is lacking. The vulnerability to weather shocks, such as floods and droughts, and threats from insects, pests and diseases are hindering further progress. The low soil fertility in Malawi is related to low fertiliser use and a low usage of mechanisation. Due to the high costs of fertilisers, national subsidy programmes such as FISP (Farm Input Subsidy Programme) were created to secure the inputs to the poorest households. However, FISP spurred dependence on subsidised fertiliser, while its results in improving food security and poverty alleviation for the poorest households have not yet been shown. The lack of infrastructure in Malawi reflects in a lack of storage facilities and post-harvest management. Also, transportation costs are high, which makes accessing the market and exporting challenging and expensive. The country’s over-reliance on tobacco as an export crop reduces diversity in exportable resources, although recent efforts have been undertaken to make coffee, sugar, tea, cotton and paprika alternative export crops.

[56] The structure of the Ministry was relevant for this study for identifying appropriate channels for dissemination of the study’s findings.

Malawi is missing a market information system to inform appropriate policy measures and enable farmers to negotiate the price of the agricultural products.

(b) Small-scale Farmers' Conditions

Small-scale farmers in Malawi face low productivity mainly due to the usage of inefficient technologies and the absence of investment in mechanisation. The small-scale farmers lack access to needed credit to invest in their production. The high input prices are making it difficult for small-scale farmers to use appropriate fertilisers, pesticides and other chemicals, which further lowers their productivity and quality levels. Poor overall health conditions, especially in rural areas, affect the efficiency of the labour force. Food insecurity influences the small-scale farmers to produce food crops and reduces opportunities to engage in cash crop production, which would potentially end the vicious cycle of farmers' poverty.

6.4 Malawi and Modern Agri-food Supply Chains

6.4.1 Selected Evidence from Recent Supply Chain Analyses in Malawi

This section outlines how agricultural supply chains perform in the context of Malawi to gain better insights into Malawi's response to agri-food transformation. It is based on the literature review of five recent studies conducted in different commodity sectors.

6.4.1.1 Pigeon Pea

Makoka (2009) explored the pigeon pea supply chain using a sample of 200 farmers from four leading districts in the production of this crop in the Southern Region: Balaka, Mangochi, Chiradzulu and Zomba. The study shows that the supply chain was lacking competitiveness due to high freight costs and low quality of the product. The small-scale farmers were mainly supplying pigeon pea and had limited access to market information and improved varieties.

6.4.1.2 Traditional Vegetables

Chagomoka *et al.* (2014) studied indigenous vegetables in Malawi using focus groups and interviews with farmers, intermediaries, retailers and seed suppliers. The findings indicated that the linkages between supply chain players were mostly weak

and input markets were missing. Indigenous vegetables were supplied without value addition, and the minority of products were processed before reaching the final customer. Most of the relationship between players were not regulated through written contracts but based on relationship marketing.

6.4.1.3 Tobacco

Burley tobacco is not a food crop; however, because of the importance of tobacco for Malawian economy, two studies involving tobacco are considered here. Tchale and Keyser (2010) and Prowse and Moyer-Lee (2014) investigated the tobacco sector. The studies showed that Malawi had some competitive advantage in producing and exporting tobacco, mainly due to low labour costs. On the other hand, farm gate prices were higher compared to other countries. The studies suggested that the farmers could improve their income by increasing productivity and lowering production costs. Furthermore, the competitiveness could be further advanced by strengthening poor links along the supply chain. One way of improving links is through contract farming, which emerged in the 2001/2002 season. The proportion of tobacco grown by small-scale farmers via contract farming increased rapidly in 2009/2010 season, which was related to greater system efficiency in the tobacco sector, due to better tobacco quality, higher prices obtained and traceability, as implied by Prowse and Moyer-Lee (2014).

6.4.1.4 Tomato

Mango *et al.* (2015) examined the tomato sector and found that Malawi had a slight competitive advantage in tomato production compared to the neighbouring country Mozambique. The advantage was a result of higher productivity and lower labour and irrigation costs. In spite of yields were considered low, which was due to low fertiliser usage. The small-scale farmers obtained low values for their products. The study emphasised that the biggest challenge for the tomato supply chain was high input price (especially for fertiliser) that reflects the country's high transportation costs.

A sample of reviewed literature showed that low product quality and productivity, no value addition, and high input and transportation costs represent major constraints for Malawian small-scale farmers competing on global agri-food markets. Small-

scale farmers in Malawi had a competitive advantage in low labour costs, but this factor is not sustainable to become a long-term foundation for the country's competitiveness as it relies on poorly paid family labour force. Therefore, Malawi will have to develop other advantages to perform in modern agri-food markets. As demonstrated in Malawi's leading tobacco sector, organising production and marketing through contracts showed the potential to improve the efficiency of a supply chain.

6.5 Contract Farming in Malawi

6.5.1 Emergence of Contracting in Malawi

According to the report from the International Institute for the Unification of Private Law - UNIDROIT (2014), contract farming emerged in Malawi mainly over three phases. During the first phase in the 1970s, contracting was dependent on the state and contracts were concluded between the government and medium and large commercial farmers. The second phase started with the market liberalisation in the 1980s when contracting was introduced to small-scale farmers. Since the early 1990s, contract farming is becoming more significant in Malawi. Malawi has not yet developed a legal dimension for CF, and contract farming is currently relying on regulations from the English law of contract with certain modifications (UNIDROIT, 2014). Malawi mostly practices contract farming for high-value cash crops, such as tobacco, cotton, paprika, tea, chillies, coffee and sugar (Figure 6.8).

Figure 6.8 Estimated number of small-scale farmers per commodity under contracts in Malawi. Source: Author's compilation based on Agar and Chiligo (2008), CYE report (2009) and Prowse and Moyer-Lee (2014). Map: FAO (2015d).

6.5.2 Current Status of Contract Farming

The evidence on contract farming's impact in Malawi is so far limited and mixed. For example, Chirwa and Kydd (2009) reported that small-scale farmers in the tea sector had insufficient voice and powers to enforce contracts. Alternatively, Kumwenda and Madola (2005) found that side-selling represented a significant issue reported by companies. Due to small-scale farmers' opportunistic behaviour, contract farming was not successfully established in Malawi (CYE report, 2009). Agar and Chiligo (2008) explored contract farming in Malawi's cotton, sugar, tea, tobacco and paprika sector and concluded that contracting increased small-scale farmers' income and improved productivity. The authors identified two issues that severely hindered contract farming operationalisation: small-scale farmers perceived the contract price as intentionally too low and contractors complained about the breach of contract terms (Agar and Chiligo, 2008).

Furthermore, one of the issues in Malawi is the absence of appropriate National Contract Farming Strategy.[57] Contracting is currently being practised both in formal and less formal ways across the agricultural sector. This results in considerable differences in contracts as each contractor can formulate the arrangement according to its preferences (UNIDROIT, 2014). Chirwa and Kydd (2009) found that small-scale farmers under direct private contracts in the tea sector in Malawi performed better compared to small-scale farmers under statutory contracts. The variety of contractual agreements in Malawi is further confirmed in the tobacco sector. For instance, Chirwa (2011) described the system where tobacco producers sign contracts with buyers to sell their product at specified grades and prices. However, once the marketing season starts, tobacco is brought to the auction where producers can decide whether to sell their contracted crop to the initial buyer or at auction floor if they are not satisfied with the price in the contract (Chirwa, 2011). Therefore, contracting in Malawi remains mostly reserved for the export cash crops and it operates through different arrangements without regulations prescribed in the national policy or strategy.

[57] The issue of lacking National Strategy is revisited in chapters 10 and 11 in more detail.

6.6 Paprika Sector in Malawi

Considering the global paprika sector, the most important producer of paprika is Asia with 84.2% of the total market share reached in 2013-2014, compared to the African share that accounted for only 4.9% in the same period (FAO, 2015; Ferreira Pinto *et al.*, 2016). The five top producers of paprika in 2014 were Vietnam, Indonesia, India, Brazil, and China (FAO, 2015a).

In Malawi, paprika is mostly grown in the Northern Region (Nkhata Bay, Mzimba, Mzuzu, and Rumphi) and Central Region (Nkhotakoka, Lilongwe, Salima, Dowa, Dedza), while districts Blantyre, Zomba, and Mwanza in the Southern Region also showed the potential for contracted production (Agar and Chiligo, 2008; CYE report, 2009; Makoka *et al.*, 2010). Paprika was first introduced to Malawian small-scale farmers in 1996 and small-scale farmers now dominate in Malawi's paprika production (Makoka *et al.*, 2010). The majority of paprika in Malawi is grown for export, while only a small proportion is consumed domestically in hot sauces (CYE report, 2009).

The paprika sector is of considerable importance for small-scale farmers in Malawi. As an export cash crop, paprika attracts premium markets and prices. The labour-intensive production process makes paprika a less desirable choice for medium to large farmers; however, it opens the door for small-scale farmers with a considerable family labour force (Makoka *et al*., 2010). Because of its characteristics, paprika is a suitable crop for contract farming, which allows small-scale farmers to be introduced to contractors.

6.6.1 Production and Trade of Paprika

The area under paprika in Malawi covered 3,299 hectares in 2013, which represented a slight growth compared to 2011 and 2012 (CountrySTAT Malawi, 2016). The two paprika varieties usually required for international trade and grown by Malawian small-scale farmers are Papri Queen and CP133 (Agar and Chiligo, 2008; Makoka *et al.*, 2010).

Figure 6.9 shows that paprika production reached high volumes in the 2009/2010 season but then dropped to levels that are lower than during the 2008/2009 season

mainly as a consequence of severe floods and droughts affecting Malawi. In the 2012/2013 season, Malawi produced 1,472 metric tonnes of paprika (WTO, 2016).

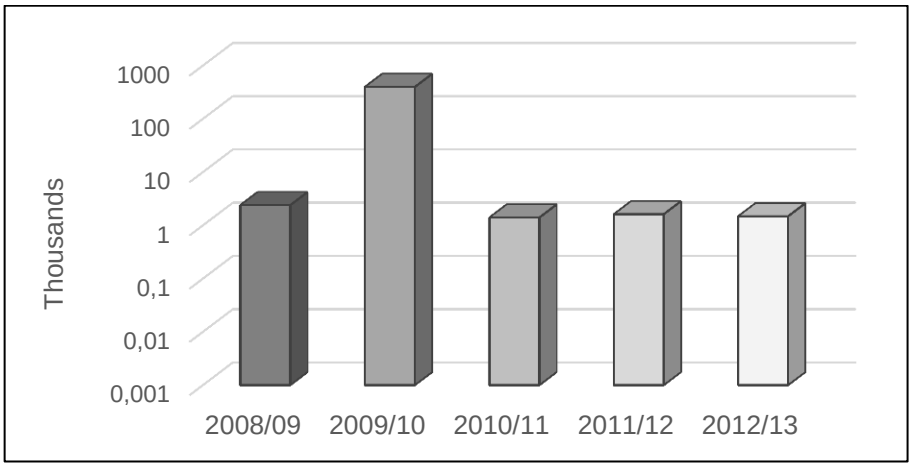


Figure 6.9 Paprika production (mT) in Malawi, 2008-2013

Note: The graph displays logarithmic values with the base 10 for improved readability. Source: Author's compilation based on WTO (2016).

In 2015, the export value of paprika was US$ 1.18 million, which represented a 14% decrease in value for the period between 2011 and 2015 (NSOM, 2016). The imported value of paprika was US$ 53,000, and this represented a 4% decline in imports from 2011-2015 (NSOM, 2016). Malawi is in 65th position in terms of world exports of paprika (NSOM, 2016).

Malawi's raw paprika is mainly exported to South Africa, where it is processed into oleoresin and powder, and further to the United Kingdom, France and Spain (Malawi Revenue Authority-MRA, 2014; NSOM, 2016) (Figure 6.10). Also, paprika from Malawi is used as a spice and food colourant (Kumwenda and Madola, 2005).

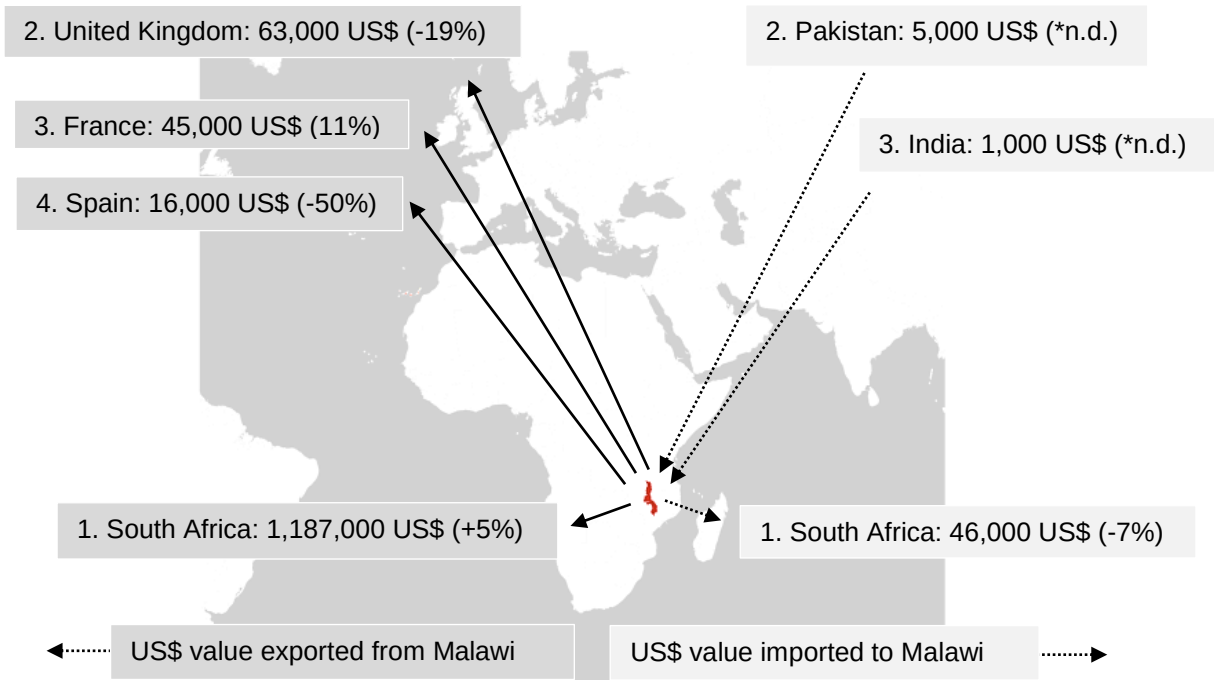


Figure 6.10 Export and import values for paprika in 2015

Note: Values in brackets are the annual growth (%) for the period 2011-2015, * n.d. = no data available. Source: Author's compilation from National Statistical Office of Malawi (2016b). Map: FAO (2015).

6.6.2 Main Characteristics of the Paprika Production

Capsicum anuum, L., known as paprika, peppers, chilli peppers, or chilli belongs to a tropical plant family *Solanaceae*. Bosland and Votava (2000) provided an updated taxonomy of genus *Capsicum* as follows: The genus *Capsicum* originated from Central and Southern America, and five species are today known for their economic value: *C. annuum, C. chinense*, *C. frutescens*, *C. baccatum* and *C. pubescens* (De Masi *et al.*, 2007; Moscone *et al.*, 2007). Paprika belongs to botanical species that produce flesh fruits with either hot or sweet flavours (Finger and Pereira, 2016) (Figure 6.11). Paprika is widely grown for commercial purposes in Europe, the United States, Brazil, South Africa, Zimbabwe, India and Taiwan (Mínguez-Mosquera *et al.*, 2007). Paprika is also used for fresh consumption, as a powder or spice, for colouring the food and in the medicine for alleviating pain (Bosland and Votava, 2000; Finger and Pereira, 2016).

Paprika is a perennial crop, but it is cultivated as an annual crop, with the plant in the form of a bush reaching 60-150 cm in height (FAO, 2007; Finger and Pereira, 2016).

Paprika requires temperatures between 18 and 30° C during the day and 15 to 18° C in the night (FAO, 2015e; Ferreira Pinto *et al.*, 2016).

- **Kingdom:** *Plantae*
- **Division:** *Magnoliophyta*
- **Class:** *Magnoliopsida*
- **Order:** *Solanales*
- **Family**: *Solanaceae*

Figure 6.11 Botanical characteristics of paprika: Flower, leaves and fruit
Source: Gema Hernandez Milian, 2016. Reproduced with author's permission.

The conditions suitable for paprika involve medium, light textured but well-drained soils with the pH of 5.5-7.0 and the recommended plant spacing at 0.4 to 0.6 m x 0.9 m (FAO, 2015e; Ferreira Pinto *et al.*, 2016). The time needed for paprika cultivation is about 210 days in arid areas and 125 days in Europe and Mediterranean (FAO, 2015e). The crop requires over 800 mm of rainfall and in Malawi, it is grown at altitudes up to 1,800 m (CYE report, 2009; Makoka *et al.*, 2010). Paprika is prone to pests and diseases and spraying is needed on a continuous base (Agar and Chiligo, 2008; Ferreira Pinto *et al.*, 2016). The yield of paprika varies significantly depending on the climate, growing period, irrigation and inputs usage and in commercial production it can reach from 4 to 15 t/ha[58] (Langmead, 2005; FAO, 2015e).

6.6.3 Evidence from Supply Chain Analysis of the Paprika Sector in Malawi: A Synthesis of Three Studies

The paprika sector in Malawi has been previously described in studies by Agar and Chiligo (2008), CYE report (2009) and Makoka *et al.* (2010). These studies were conducted to (i) analyse the paprika industry and the supply/value chain, (ii) identify

[58] Levels for small-scale farmers' production are outlined in chapter 9.

the main players and their linkages, (iii) describe and assess performance of contract farming arrangements, (iv) identify factors limiting CF expansion, (v) identify opportunities for value addition and (vi) analyse the institutional framework.

The main strength of these studies is that, together, they provide a comprehensive introduction into the paprika sector and offer an extensive description of relations within the supply chain. Also, since studies were done in small time intervals, it is possible to compare and synthesise them to project the status of Malawi's paprika supply chain.[59] However, studies involved relatively small sample sizes to make inferences about the wider context (Table 6.1). Since the purpose was related to elaborating on completed projects and consultancy work, the studies were limited in providing and discussing a theoretical and analytical framework for the explored phenomenon.

Table 6.1 Comparison of research methodology from studies on paprika in Malawi

Study	Study area	Used instruments	Sample size	Analysis
Agar and Chiligo (2008): '*Contract Farming in Malawi'*	Central and Northern Region, including Blantyre, Zomba and Mwanza in the South	*Primary research*: Interviews with buyers and farmers, data triangulation by farmers' association and union. *Desk study*: Review of sectoral documents and studies.	Not identified.	Narrative and tabulation.
CYE report (2009): '*Value Chain Analysis of Selected Commodities. Institutional Development across the Agri-food sector*'	Districts: Nkhotakota, Mzimba, Salima, Nkhata Bay, Mzuzu, Rumphi and Lilongwe	*Primary research:* Semi-structured questionnaires, checklists, tables and value chain reporting templates to collect data from farmers, traders and exporters. *Desk study*: Review of three relevant documents on value chain analysis in the paprika sector.	7 key informants and an unidentified number of farmers and respondents from the Ministry.	Narrative, descriptive statistics, gross margin calculation, tabulation, value chain diagram and SWOT analysis.
Makoka *et al.* (2010): '*Value chain analysis of Paprika and Bird's Eye Chillies in Malawi*'	Districts: Nkhotakota, Mzimba, Dowa, Ntchisi and Dedza.	*Primary research*: Household questionnaires with farmers and interviews with stakeholders. *Desk study*: Crop and trade estimates for paprika from the Ministry, National Statistical Office, FAOSTAT database and interviewed contractor,	118 paprika farmers and 22 key informants.	Narrative, boxes, descriptive statistics, gross margin calculation, tabulation, value chain diagram, photographs and graphs.

Source: Synthesis from Agar and Chiligo (2008), CYE report (2009) and Makoka *et al.* (2010).

[59] Throughout this study, the literature and findings are compared against the stated three studies.

The three studies done in the paprika sector in Malawi suggested that contract farming had a diverse effect on small-scale farmers so far. According to Agar and Chiligo (2008), contracted small-scale farmers reported improvements in their income generation, but they lacked the access to inputs and credit. The small-scale farmers were side-selling paprika and did not repay their loans (Agar and Chiligo, 2008). Makoka *et al.* (2010) argued that the major constraint for the contracted small-scale farmers was the access to market information, in particular, about price. CYE report (2009) emphasised the absence of trust and negotiation practices found between small-scale farmers and the companies in the paprika supply chain.

These studies concluded that, although the paprika sector is promising for improving the potential of Malawi's food industry and exports, the unrealistic expectations from this crop should be discouraged, especially regarding income generation (CYE report, 2009). Nonetheless, the status of the paprika sector might be improved if legally binding contracts are promoted, farmers' associations are established, and small-scale farmers are able to increase their productivity levels (Agar and Chiligo, 2008; Makoka *et al.*, 2010). The three studies provided basis for further research to deepen the understanding of the key challenges in the paprika supply chain with an aim to appropriately address them and enable more efficient and sustainable relations between the players in the paprika supply chain

6.7 Summary

Chapter 6 focused on the study area in broader terms to position the research in the context of Malawi. The chapter outlined the socio-economic circumstances in Malawi, as well as the status of the agricultural sector and its key challenges. The competitiveness of Malawi's agri-food supply chains was examined through examples of recent empirical studies. A review of contract farming practices and the paprika sector in Malawi provided the outline of the study setting. Chapter 7 now describes the research methodology employed.

PART FOUR: METHODOLOGY

Chapter 7 Research Methodology

7.1 Introduction

Chapter 7 outlines the research methodology used in this study. The first section provides the rationale for using a mixed method approach and describes The Embedded Design-Multilevel Model with both concurrent and sequential data collection and QUAL priority. The chapter continues with the focus on the case study, participatory approach and triangulation of sources and methodology. The study setting and sequence are also introduced. The third and fourth sections describe data collection methods, research instruments, sampling methods and data collection protocols for qualitative and quantitative research query respectively. The analytical framework of the study is outlined in section five. The last two sections outline how the study strived to achieve validity and reliability and explains the major methodological limitations.

7.2 Mixed Methods Approach

7.2.1 Rationale for the Approach

This section develops the argument for using a mixed method approach in this study.[60] The study follows pragmatism as a paradigm and the philosophical tradition stating that '*the truth of an idea is dependent on its workability; ideas or principles are true in so far as they work*' (Savin-Baden and Howell Major, 2013, p. 60) (see section 2.1.2 in chapter 2 for more details). Creswell *et al.* (2003) simply defined mixed method study as one involving collection and analysis of quantitative and qualitative data with the integration of both types of data at one or more stages during the research. According to Creswell and Plano Clark (2007), the key advantages of a mixed methods approach include:

- Combining both types of data has the potential to provide a better understanding and more complete analysis of problems compared to only numbers or only words;

[60] Under section 7.2.2 in this chapter, the embedded single case study approach is described as an approach that was chosen for this research due to the idea of combining qualitative methods (case study) with quantitative methods (survey).

- A mixed methods approach encourages collection of more comprehensive evidence on studied phenomenon;
- Using a mixed methods approach can overcome inherent weaknesses of separately applied quantitative and qualitative methods;
- By using a mixed method approach, a researcher can identify and perhaps overcome discrepancies in the data, which would not be possible if only one method is used; and
- A mixed method approach offers an alternative to back up one method with another one in cases where one method itself does not provide enough evidence about the phenomenon.

Moreover, Teddlie and Tashakkori (2009) stated that a mixed methods approach provides stronger inferences and a better opportunity to capture divergent views. Nevertheless, a mixed methods approach also has some disadvantages. For instance, Bryman (2012) summarised two main arguments against a mixed methods approach as follows:

(1) Research methods carry ontological and epistemological commitments, i.e. by choosing a certain research method, one commits to its related position about the nature of the reality and the relationship between the researcher and participant, such as constructivism or, in contrast, postpositivism (see section 2.1.2 in chapter 2, Table 2.1).

(2) Quantitative and qualitative research are seen as separate paradigms, and they are incompatible; thus, mixed methods research is not plausible.

Both arguments, however, can be rebutted through the third paradigm - pragmatism, which combines both singular and multiple realities and objective and subjective points of view in addressing the problem.[61] Another critique of a mixed methods approach is that it is time consuming since the data collection and analysis involve numerous respondents and large amounts of data. However, appropriate research design can overcome this pitfall by formulating research objectives that are heavily

[61] More details on the pragmatic approach adopted are provided in chapter 2, section 2.1.2. It is beyond the scope of this study to engage in deeper discussion on the boundaries of each paradigm.

focused on one problem and use one to two optimal instruments from each research method.

As stated in chapter 2, the choice of a mixed methods approach was influenced by the pragmatic paradigm. The rationale for a mixed methods approach in this study is as follows:

(i) It provided in-depth insights into the key challenges (qualitative part) and further recorded the extent of some challenges (e.g. how many small-scale farmers side-sell and in what ratios);

(ii) It enabled methodology triangulation when addressing one issue to make more reliable conclusions (e.g., discrepancy in the data about the overall satisfaction with the contract were explained);

(iii) It allowed recording of different positions on the key challenges in the supply chain through household questionnaires and semi-structured interviews;

(iv) It allowed recording of detailed quantitative data on embedded unit of the analysis that was of high interest (small-scale farmers) to understand attitudes expressed in qualitative form; and

(v) It bridged the gap that would exist if only quantitative or qualitative data were collected; e.g. well-identified challenges without idea of about households' livelihood conditions, or recorded number of small-scale farmers unsatisfied with the contract without the reasons behind it.

7.2.2 Embedded Design–Multilevel Model with both Concurrent and Sequential Data Collection and QUAL Priority

There are various designs and models identified in the mixed methods literature. In this study, the embedded design was chosen as it allows nesting the household questionnaire within the mainly qualitative case study. Thus, this was utilised as the integration point where the embedded case study with three units was 'transformed' into the Embedded Design-Multilevel Model (see Figure 7.1).

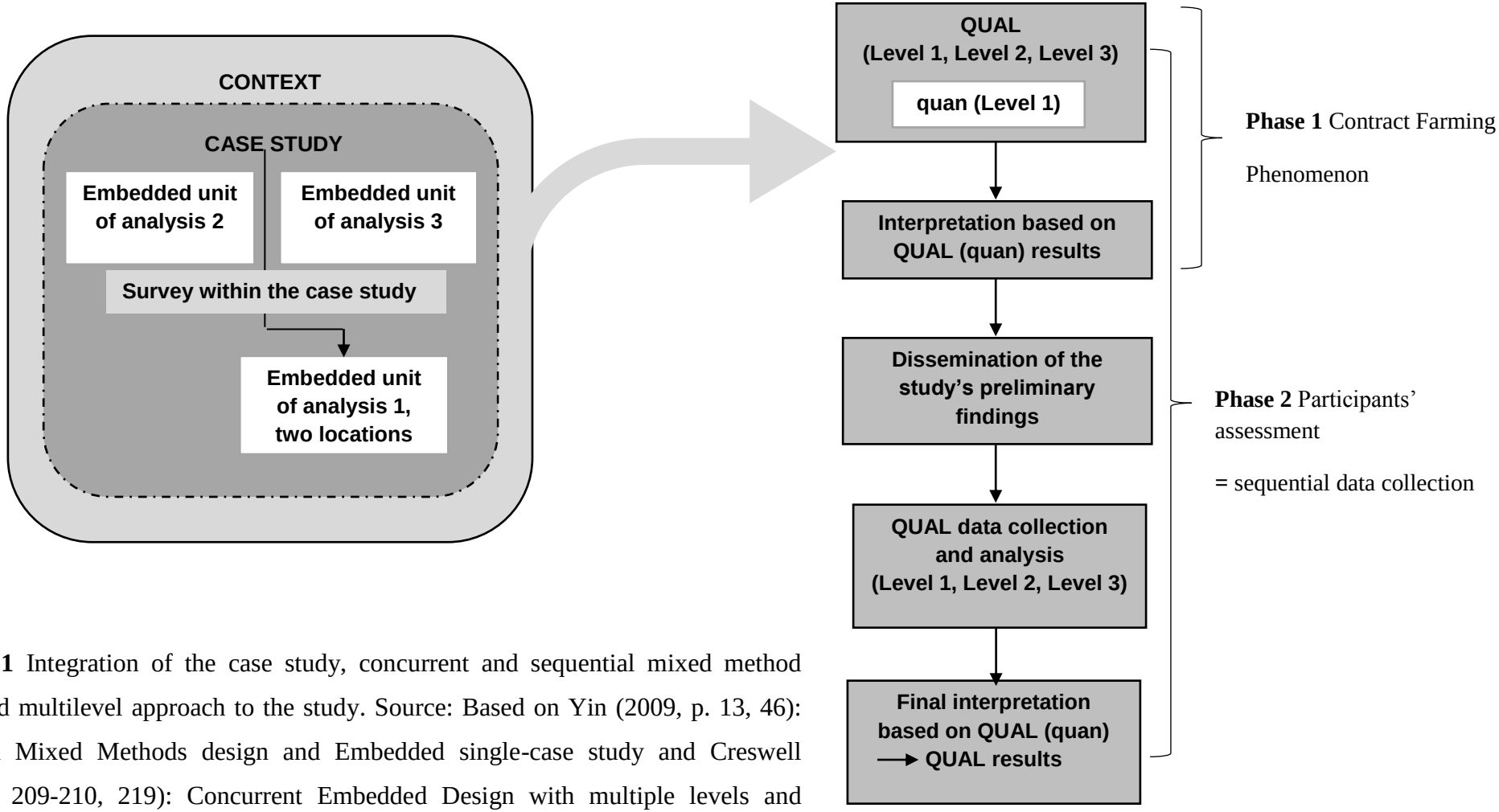


Figure 7.1 Integration of the case study, concurrent and sequential mixed method design and multilevel approach to the study. Source: Based on Yin (2009, p. 13, 46): Integrated Mixed Methods design and Embedded single-case study and Creswell (2009, p. 209-210, 219): Concurrent Embedded Design with multiple levels and sequential approach.

According to Creswell *et al.* (2003) and Creswell and Plano Clark (2007), an embedded mixed method design has one dominant method that leads the study and another supporting method, which provides additional information, and addresses a different type of question or gathers information from different levels. In this study, an additional method (quantitative) was needed to supplement the data from the qualitative method. The quantitative research method was used in the case of small-scale farmers to explore the influence of contract farming on their livelihoods. Households under contract provided a broad spectrum of livelihood conditions, which was the base for development of the typology and in-depth analysis (chapters 8 and 9). A quantitative research approach with small-scale farmers enabled the synthesis of data from a relatively large number of individuals to understand how they lived and behaved in relation to the studied phenomenon. In contrast, Company D (the contractor in the case of the paprika supply chain) and the enabling environment represent business subject/institutions that operate separately from each other and contract farming is only one of their activities. It is beyond the scope of this study to take into consideration the entire production or financial aspects of Company D and the enabling environment using a quantitative approach, so the focus remained on small-scale farmers.

A multilevel model is one of the mixed methods approach models that uses several levels (units) of the analysis. In the study, the data were not collected from only one level but rather the participants represented three different levels of the supply chain: small-scale farmers (Level 1), Company D (Level 2) and the enabling environment (Level 3). In multilevel models, different methods are used to gather data from different levels, i.e. the dominant qualitative method was used to gather data from all three levels and the quantitative method was used to collect additional data from the small-scale farmers' level (Creswell and Plano Clark, 2007). The analysis in a multilevel model involves integrating data from all levels to make meta-inferences (Teddlie and Tashakkori, 2009).

The time component in a mixed methods approach plays a role. Initially, there are two basic options for conducting mixed methods: concurrent and sequential data collection. Concurrent data collection occurs when the study consists of a single

phase, and both qualitative and quantitative data are collected, analysed and interpreted simultaneously or within a minor time lapse (Creswell and Plano Clark, 2007). Sequential data collection is present when the study has more than one phase, and one type of data (e.g. qualitative) is collected, analysed and interpreted before another type of data (e.g. quantitative) (Teddlie and Tashakkori, 2009). Moreover, in sequential data collection, the sequences are related to completing the study's objectives (Creswell *et al.*, 2003). This study adjusted the time component of the mixed methods approach to use both concurrent and sequential data collection. This was done to allow the last stage (dissemination of the study's findings) as part of the study. Therefore, the preliminary research and first two visits concurrently (although with some time lapse) were used to collect, analyse and interpret data by triangulating them (Phase 1). Furthermore, once all data were interpreted, the findings[62] informed the data collection for the third visit or Phase 2 of the research where qualitative data were gathered from all three levels. The described adjusted multiphase approach was performed to complete the study objectives, which reflected the study's two phases: the first phase addressed the first three objectives and the second phase addressed the fourth objective.

7.2.3 Alternatives to the Applied Methodological Approach

The alternative to a mixed methods approach is using only one method generally. The justification for using mixed methods is provided under section 7.2.1. Nevertheless, due to well-developed designs and models within the mixed methods approach, there are other alternatives. This section briefly discusses one alternative design and model. First, instead of embedded design, a concurrent triangulation model could have been used. Concurrent triangulation model is widely employed by researchers in single-phase studies when quantitative and qualitative data are collected simultaneously and with an equal priority to compare two data sets and determine whether there is any difference or convergence (Creswell and Plano Clark, 2007). Although concurrent triangulation offers straightforward and clear implementation, it would fail to capture (i) different levels that exist in the study's case, (ii) priority dynamics in the study in terms of emphasising the small-scale

[62] This study uses the term *results* to refer to the outcome of the analysis of qualitative and quantitative data (e.g. cross-tab or an interview quote). The term *findings* is used for interpreted or discussed results.

farmers' side, and (iii) it would not be possible to incorporate and distinguish between two phases of the study as this model assumes only one phase. Second, besides multilevel design, there are convergence, transformation and validating quantitative models that exist but none of them deals with the data from different levels (Creswell and Plano Clark, 2007).

7.3 Overview of the Study's Research Design

7.3.1 Case Study in the Centre of Design: Recalling the Agri-food Supply Chain Management

This study looks at relations among players in the paprika supply chain, as outlined in chapter 1 through the overall aim and objectives of the study, and further in chapter 2 through the overarching concept of supply chain and agri-food supply chain management. Hence, it is useful to revisit Christopher's (2005, p. 5) leading thought about the SCM/ASCM: '*Thus the focus of supply chain management is upon the management of relationships to achieve more profitable outcome for all parties in the chain*.' The appropriate research method for the stated circumstances is the case study. According to Yin (2009, p. 2), the case study is a preferred qualitative method when a study explores '*a contemporary phenomenon within a real-life context*' and aims to contribute to deepening the knowledge about that phenomenon. Moreover, Creswell (2013) states that the case study is useful once the researcher has clearly identifiable cases and their boundaries. In addition, in the case study, one of the decisions involves the choice of whether single or multiple case studies will be used (Yin, 2009). Table 7.1 defines the case for this study.

The case study method often relies on in-depth data collection, involving multiple sources of evidence and triangulation, which suits the study's aim (Yin, 2009; Creswell, 2013). Moreover, a single case study might have multiple units of analysis where one unit is studied in more detail by using a quantitative technique to provide richer data, which is then considered as an embedded case study design (Yin, 2009). Thus, the choice of an embedded case study method allows an emphasis to be put on small-scale farmers in the paprika supply chain to understand better their conditions and behaviours regarding contract farming. Since CF is a business model that is continuously being assessed in different circumstances, a great advantage of the case

study is that reporting of a case might take the form of lessons learned providing guidance on the efficient and less efficient ways to practice contract farming. The embedded case study design is further developed under section 7.3 within this chapter.

Table 7.1 Defining the case study

Phenomenon	**Contract farming**
Definition of the phenomenon	Institutional arrangement between two parties, which organises cultivation and marketing of an agricultural product
Context	Low-income developing country
Purpose	Exploratory, descriptive, problem-solving
Research approach (philosophical stance)	Pragmatism
Number of cases	Single case, two locations (districts)
Type of the case	Representative/typical case
Type of single case study	Embedded design, a survey within a case study
Major unit of the analysis (the case)	Paprika supply chain
Embedded units/levels of the analysis	Small-scale farmers in two districts, Company D and the enabling environment
Geographical boundary	Central Region in Malawi
Time boundary	Farmers under paprika contract between seasons 2014-16

Source: Author's adaptation based on Yin (2009), Creswell (2013) and Savin-Baden and Howell Major (2013).

7.3.2 Key Principles of the Study's Research Design: Participatory Approach and Triangulation

Considering the studied phenomenon and the research design, this study adopted two principles that were practised throughout the research phases: a participatory approach and triangulation (Table 7.2). Contract farming involves and affects players in the supply chain; thus, players are the focal point of interest. Those players, who are affected by the system, carry a rich knowledge about the system itself. The participatory approach encourages the active participation of players from designing the research to dissemination of the study's findings and discussion about study implications, which is often in contrast with the approach that treats players as passive subjects or relies heavily on experts who provide solutions detached from the

context-specific situation (Foote Whyte *et al.*, 1991). In addition, the participatory approach '*treats participants as competent and reflexive agents capable of participating in all aspects of the research process*' and mobilises the knowledge that already exists within the community to increase collective understanding of how to act for the benefit of the community and strengthen its capacity (Kindon *et al.*, 2007, p. 14; Chancellor and Ludemann, 2012; Chevalier and Buckles, 2013). Related to the context of this study and in particular small-scale farmers, Chambers (1994, p. 1445) summarised it as:

> *'A commonplace of [participatory] experience is that rural people can do much that outsiders have thought they could not do, and often that they themselves have not known they could do. One by one the dominoes have fallen as they have shown that they can map, model, rank, score, estimate, diagram and analyse more and better than expected. Often, too, they have done these better than outsiders. The working rule has become to assume that local people are capable of something until it is proved otherwise.'*

Therefore, the study design envisaged the most important place for the participants[63] as the drivers and users of the research. The practical value of the research derives from proposed options for addressing the key challenges and their usefulness for participants in the real-life situation (Kindon *et al.*, 2007).

The triangulation principle followed the methodological path chosen. Defined as '*the combination of at least two or more theoretical perspectives, methodological approaches, data sources, investigators, or data analysis methods*', triangulation serves to decrease inefficiencies of a single strategy for data collection and analysis (Thurmond, 2001, p. 258). Jick (1979) drew the parallel with geometry stating that multiple points of view will secure greater accuracy when applying triangulation. In the study, data source and methodology triangulation were used. The purpose of triangulation was to crosscheck the information from multiple sources (data source triangulation) and increase the credibility by contrasting results (methodology triangulation).

[63] Participants are considered small-scale farmers, Company D and the enabling environment (i.e. the key players in the supply chain).

Table 7.2 Participatory approach and triangulation applied throughout the study

Participatory Approach	Triangulation
Preliminary Research (2013/14) • Consultation with Company D on restructuring initial research objectives ***First Field Visit to Malawi (2014)*** • Informal interviews with local stakeholders to re-define initial research objectives • Training of local enumerators and facilitators in collecting the data • Re-defining research objectives through training and cross-checking of questionnaire questions with enumerators and facilitators • Re-defining research objectives and questionnaire questions through the interview with Company D's representative • Adding one sub-unit to the analysis (vendors) after interviews with key stakeholders • Conducting focus group interviews with small-scale farmers using interactive mapping, ranking and calculation of CF costs and benefits ***Second Field Visit to Malawi (2015)*** • Conducting focus group interviews with small-scale farmers using interactive mapping, ranking and calculation of CF costs and benefits • Debriefing on key lessons learned with enumerators and facilitators upon completion of data collection ***Third Field Visit to Malawi (2016)*** • Focus group discussions/interviews with key stakeholders, small-scale farmers and representatives from the Ministry of Agriculture, Irrigation and Water Development to disseminate and verify main findings, discuss possible options for improving contracting through the *Model What-How-Who,* propose final recommendations and spread the knowledge within the local context and to the main beneficiaries and players	***Research objective 1: Supply Chain Dynamics*** • Data source triangulation: data from small-scale farmers, Company D and the enabling environment • Methodology triangulation: data from household questionnaire, semi-structured interviews and focus group interviews ***Research objective 2: Motivation to Enter and Influence of CF on Small-scale Farmers' Livelihood*** • Methodology triangulation: data from household questionnaire and focus group interviews ***Research objective 3: Key Challenges Identified*** • Data source triangulation: data from small-scale farmers, Company D and the enabling environment • Methodology triangulation: data from household questionnaire, semi-structured interviews and focus group interviews ***Research objective 4: Options for Improving Contracting Conditions*** • Data source triangulation: data from small-scale farmers, Company D, the enabling environment and experts

7.3.3 Research Setting: The Nkhotakota and Lilongwe Districts

The data for the study were collected in the Nkhotakota district located on the shore of Lake Malawi and the Lilongwe district, which surrounds the capital of Malawi. The distance from Company D's headquarters[64] varied: the Lilongwe district is situated on the capital's outskirts and plays a significant role in connecting neighbouring districts with the capital city. The study area in the Nkhotakota district was approximately 145 kilometres from the capital. Table 7.3 outlines the main characteristics of the two studied districts.

Table 7.3 Comparison of socio-demographic characteristics in two districts

Socio-demographics	Year	Nkhotakota	Lilongwe
Capital		Machinga	Lilongwe
Land area (sq. km)	2008	3,771	5,703
Population	2008	303,659	1,230,834
Density (people per sq. km)	2008	130	216
Sex ratio (females per 100 males)	2008	100.2	100.2
Number of households	2008	62,468	275,194
Average household size (persons per room)	2008	4.8	4.5
Enrolment in primary education	2007	78,050	431,003
Enrolment in secondary education	2007	1,942	25,662
Literacy rate (%)	2008	61	57
Food crop area (ha)	2005	98	198
Poverty (% of poor)	2005	48	37.5
Life expectancy at birth	2008	Males: 49 Females: 52.8	Males: 41 Females: 46.5

Source: Author's compilation from National Statistical Office of Malawi (2016).

Furthermore, the research was conducted both in an urban and a rural area, according to the residence of respondents. Key informant interviews were carried out within the capital Lilongwe, where the majority of stakeholders were gathered.

[64] Located in the capital Lilongwe.

The household questionnaires and focus group interviews undertaken with small-scale farmers took place in villages of Nkhotakota and Lilongwe district. The districts were chosen after applying several criteria.[65] First, the geographical position was determined taking into consideration the concentration of small-scale farmers cultivating paprika in the Central Region. According to the literature and sources from the field, Nkhotakota and Lilongwe districts were identified as suitable for the research. Second, the prerequisite for choosing the area was established contractual agreements with small-scale farmers in the community. Since the research looked deep into contracts, the sub-criterion was that CF (directly or indirectly) must be already incorporated into the life of the rural community, so that small-scale farmers would be able to discuss its influence.

Third, the number of small-scale farmers engaging in contract farming had to be relevant for the research, meaning that less than 100 small-scale farmers having contracts for paprika in the whole district was not acceptable. Fourth, small-scale farmers included in the questionnaire and focus groups had to have contracts with Company D; thus, the contractor and the small-scale farmer that signed the agreement must have been matched, since the study looked at how specifically Company D's contract influenced small-scale farmers.[66] Finally, the two districts were selected to include a wider range of small-scale farmers' circumstances and experiences under CF.

7.3.4 Research Sequence

The study involved preliminary research and three visits to Malawi. The following subsections briefly describe the purpose and outcomes of each sequence in the study.

7.3.4.1 Preliminary Research

The preliminary phase of the study involved desk research and interviews with experts and Company D. The purpose of the desk research was a systematic

[65] The logic of sampling is explained here and is further expanded under sections 7.4.2 and 7.5.2 in this chapter.

[66] There is an advantage in studying different contracts from different companies to explore how contract design might influence small-scale farmers. However, during the study, only Company D provided contracts to small-scale farmers in the Central Region. Therefore, the fourth criteria transformed into the criteria that small-scale farmers participating in the study have to have a contract, as non-contracted paprika farmers were not included in the study.

literature review to identify the gap in the knowledge on contract farming and set foundations for formulating research objectives.

The desk research consisted of reviewing secondary data available through scientific databases (e.g. JSTOR, Science Direct, Scopus, Web of Science, and Google Scholar) with the primary focus on theoretical constructs (chapter 2), overarching concepts (chapter 5) and empirical evidence on contract farming benefits and constraints (chapters 4 and 5). In addition, the literature on Malawi's conditions was consulted (chapter 6). The secondary data obtained were predominately in the form of books, scientific articles, policy documents, reports, FAO and WB publications, case studies, working papers and statistical databases.

Skype interviews with 10 experts were conducted at the early stage of the research. The criteria for selecting experts was their knowledge and contribution to the field of contract farming in developing countries (Schensul, 2008). The purpose of those interviews was to: (i) explore the insights of leading experts about benefits and challenges of contract farming, (ii) formulating and revisiting research objectives, (iii) verifying the relevance of the study in the wider context. In addition, Skype interviews served as preparation for interviews and focus groups in the field and informed some parts of the interview guide and household questionnaire.

The Skype interview with Company D was conducted prior to the first field visit to enable early participation of one of the key players in defining research directions. The interview provided: (i) brief insights about the situation in the field; (ii) information used to modify and determine the scope of the research;[67] and (iii) information used to re-define research objectives. The interview also served to obtain data on the number of contracted small-scale farmers, which influenced the study's sample size.

In summary, preliminary research secured the context for the study, positioned the study in the existing body of knowledge, informed the formulation of research objectives and influenced the choice and construction of research instruments.

[67] For instance, the initial idea was to explore contracts for both paprika and chillies but the interviewee pointed out that contracts for chillies are almost non-existent due to the uncertain market in the previous year.

7.3.4.2 Three Field Visits: Purpose and Link with Research Objectives

The first field visit to Malawi was conducted from 1st to 24th of November 2014. The actions undertaken during this visit included formal and informal interviews with stakeholders, piloting of the questionnaire, the first round of household survey data collection and focus group interviews. Formal interviews with stakeholders were conducted to collect planned data, while informal interviews with local stakeholders included local residents with direct or indirect links to contract farming. The purpose of interviewing local stakeholders was to broaden the perspective on the situation in the field and continue re-defining research objectives. Before physically piloting the household questionnaires and performing focus group interviews in the field, enumerators and facilitators were selected and trained. The training involved clarifying each question in the household questionnaire and focus group interviews to remove any ambiguity and bias. This resulted in changes to some parts of the household questionnaire (see Table 7.4 for the excerpt and Appendix 2 for the entire questionnaire) and highlighting the important questions that needed to be answered during the focus group interviews. The first village Kasipa in Nkhotakota district was used for piloting the questionnaire in the field and included 15 respondents. No additional changes were needed for the questionnaire.

The first field visit resulted in the administration of 125 household questionnaires and two focus group interviews in the Nkhotakota district and 14 formal interviews with stakeholders. The collected data contributed to the completion of the first three research objectives related to: supply chain dynamics, the influence of contracting on livelihoods and identifying key challenges.

The second field visit to Malawi was conducted from 22nd of February until 7th of April 2015 in the Lilongwe district. The actions undertaken during the second visit included formal interviews with the remaining stakeholders, interviews with vendors, briefing and interviews with Company D's representatives, observations, household questionnaires and focus group interviews.

Table 7.4 Piloting the questionnaire: Modifications made during the consultation with enumerators

Initial question no.	Initial version in the questionnaire	Final question no.	Final version in the questionnaire
11	*If yes, what type of contract farming are you involved in?* • Marketing (pre-determined price, volumes and quality) • Production (contractor controls labour and production) • Resources (pre-determined price, volumes, quality and provided inputs)	Excluded from the final version.	**Comment:** The question was irrelevant as during the initial interview with the Company D representative, it was stated that all small-scale farmers are offered the same contract, which falls under the category 'Production'.
14	*Who is involved in contract farming activities in your household*? • Household head • Head and wife • Males in household • Females in household • All members	12	*Who is involved in contract farming activities in your household*? • Household head • Head and wife/husband • Males in household • Females in household • All members **Comment**: Enumerators noticed that option 2 supposed that the head of the household was male. The option was corrected to avoid gender bias.
26	*How much do you pay for the seed used for planting Paprika per season*? • Less than 2000 • 2001-3500 • 3501-5000 • 5001-6500 • 6501 and above • Don't know	24	*How much do you pay for the seed used for planting Paprika per season (in MKW)*? • Less than 250 • 250-450 • 451-650 • 651-850 • More than • Don't know **Comment**: The initial options were overestimating the cost for the seed and were reduced accordingly. The currency was added for the clarity.
33	*What means are used for the transportation of your Paprika*? • Truck • Car • Motorbike • Bicycle	31	*What means are used for the transportation of your Paprika*? • Truck • Car • Motorbike • Bicycle • Carrying crop on the head/manpower **Comment:** The fourth option was added after consultation with enumerators who were familiar with local conditions.
56	*Do you have access to electricity in your house?* • Yes • No	52	*Do you have access to electricity in your house?* • Yes • No • Solar system **Comment**: The solar system was available in the area and this option was added accordingly.

The second visit benefited the study in two ways. First, the vendor's view[68] was added to the body of collected data on the key challenges. Second, Company D's representatives were briefed on the preliminary results and offered their reasoning on why data pointed to certain issues. These views were later added for triangulation purposes. The second field visit resulted in 303 household questionnaires and six focus group interviews from the Lilongwe district and 7 formal interviews with stakeholders. The collected data contributed to the completion of the first three research objectives related to: supply chain dynamics, the influence of contracting on livelihoods and identifying key challenges.

The third field visit to Malawi was conducted from 10th to 16th of July 2016. The actions undertaken during the third visit included focus group interviews and discussions with small-scale farmers and stakeholders. The purpose of the final visit was to disseminate the study's findings to participants. Also, in accordance with the fourth research objective and participatory approach, dissemination of the study's findings was used to enable participants to suggest and discuss options for improving contracting conditions in their communities and therefore become the change-proposers and change-makers rather than passive observers (Foote Whyte *et al*., 1991; Chambers, 1994; Kindon *et al*., 2007).In the final step, the proposals from the small-scale farmers, Company D and the enabling environment were disseminated through focus group discussion to the representatives of the Ministry of Agriculture, Irrigation and Water Development. Thus, the third visit resulted in two focus group interviews and two focus group discussions and it completed the fourth research objective.

7.4 Qualitative Approach

This section describes the data collection methods and instruments, the sampling method and data collection protocol for the qualitative part of research query in the study. Figure 7.2 summarises the data collection tools and stakeholders involved organised by visit to the field.

[68] Vendors operate as an informal sector and in direct opposition to companies such as Company D. Thus, their view is a valuable source of information for triangulation purposes. In addition, appointing the interview with the vendor is not always feasible.

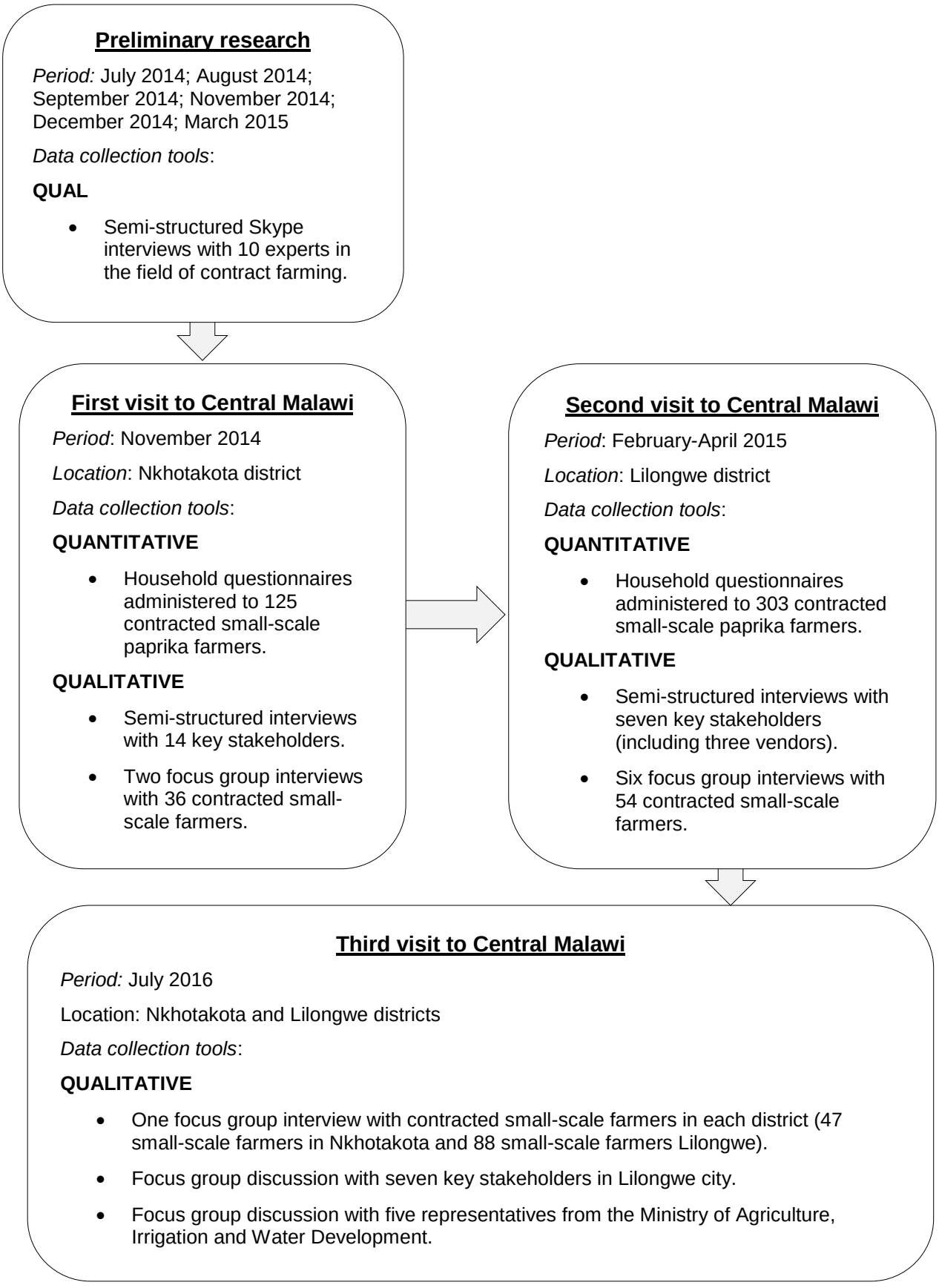


Figure 7.2 Data collection tools and stakeholders

7.4.1. Data Collection Methods and Instruments

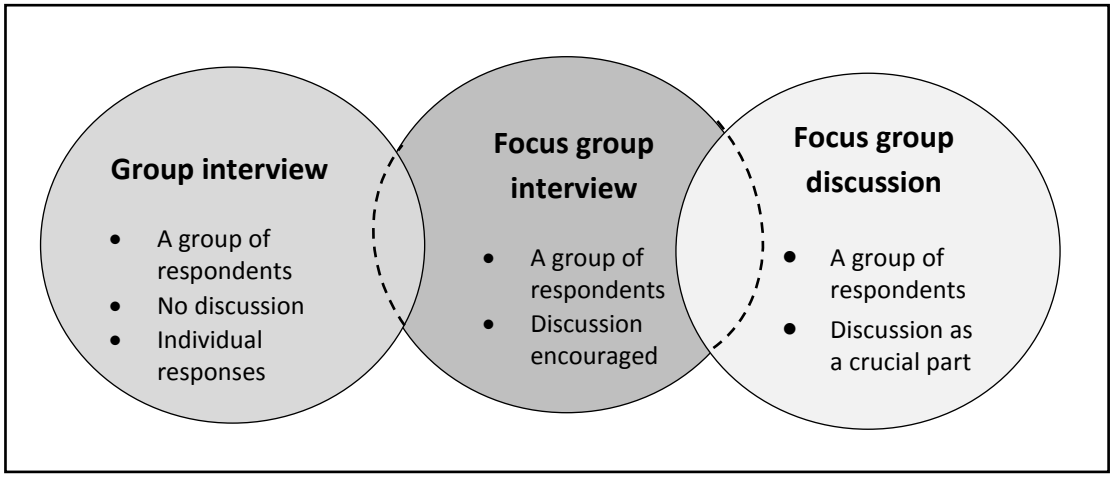
7.4.1.1 Semi-structured Interviews: Key Stakeholders and Experts

Semi-structured interviews are interviews conducted following a flexible guide, where the researcher asks questions and covers pre-determined topics in the guide but also includes additional questions depending on interviewee's actions, comments and knowledge (Savin-Baden and Howell Major, 2013). In the study, semi-structured interviews were created for five different stakeholders, according to their knowledge and potential contribution to the research topic: (i) Company D, (ii) Government, (iii) civil society and NGOs, (iv) academic and research units, and (v) associations/unions. Additional short guides were created for vendors. Interviews were performed using a digital voice recorder and were transcribed to enable further analysis. Verbal consent for recording the interviews was obtained prior to every interview. The average length of an interview was between 45-90 minutes. Expert semi-structured interviews were carried out using a standardised interview guide. Interviews were conducted via Skype calls that were recorded and transcribed afterwards. A verbal consent for recording Skype calls was obtained prior to every interview. An average length of an interview was between 50-80 minutes. In total, 21 stakeholder interviews and 10 expert interviews were conducted (see Appendix 4 for the interview guides).

7.4.1.2 Focus Group Interviews with Small-scale Farmers

This study makes a distinction between group interviews, focus group interviews and focus group discussions. Although the literature sometimes uses these terms interchangeably, in this study they are considered as separate instruments due to the language barrier encountered during the fieldwork (see Figure 7.3 for the differentiation). The most appropriate description of focus group interviews conducted in this study is the one from Savin-Baden and Howell Major (2013) who compared focus group interviews with carefully planned and facilitated interview. The main difference between the group interview and focus group interview is that the latter encourages (if possible) the discussion among interviewees, which in turn '*allow[s] the researcher to view social processes in action*' (Savin-Baden and Howell Major, 2015, p. 375.)

Figure 7.3 Differentiation between the group interview, focus group interviews and focus group discussion[69]



Source: Adopted from Savin-Baden and Howell Major (2013, p. 375).

In addition, Creswell (2007) stated that focus group interviews are useful in exploring a groups' opinion about some specific topic and especially for documenting the range of different ideas within a community.

Since focus group interviews were conducted in the local language, it was not possible for the researcher to capture the discussion of various topics between members. Rather, the transcripts from facilitators outlined individual views and group consensuses occasionally, which resembled the group interview transcript. Therefore, to acknowledge the limited role of the researcher in the focus groups conducted in the local language, they were marked as interviews and not discussions. Focus groups interviews contributed to the study to a great extent and are considered as one of the most valuable sources of information on the key challenges in the studied supply chain. According to Bryman (2012), the size of a focus group can be from 4-8 but bigger groups were also noted in the literature.

Focus group interviews were held in two districts. The main facilitator and the assistant were leading the interviews with local groups using flip charts for mapping

[69] Group interview involves a group of interviewee who answer researcher's questions, however, instead of the discussion - each interviewee provides an individual response (Savin-Baden and Howell Major, 2015).

the supply chain and farming practices, ranking and cost analysis. Discussions lasted around 90 minutes and were audio recorded with prior verbal group consent from participants. In total, the study collected 10 focus group interviews with 131 participants involved (Table 7.5). The focus group interview guide is in Appendix 3.

Table 7.5 Number of focus group interview participants by area

Area (cluster)	Number of participants	Gender of participants (Female/Male)	Year
Nkhotakota district			
Kamparilo	28	12/16	2014
Limbikani	8	0/8	2014
Chakaka Benga	11	5/6	2016
Lilongwe district			
Kawaid	8	0/8	2015
Kastoche	9	8/1	2015
Chowa	11	6/5	2015
Chiputu	6	0/6	2015
Khongoni	12	0/12	2015
Chawatha	8	0/8	2015
Lisungwi Farm	34	3/31	2016
TOTAL	**135**	**34/101**	

Note: The female/male ratio was 25:75.

7.4.1.3 Focus Group Discussions with Key Stakeholders

Two focus group discussions with key stakeholders were conducted during the study. These discussions were performed using the English language. Therefore, they are distinguished from focus group interviews in the local language as it was possible for the researcher to understand and facilitate the discussion among participants. A focus group discussion is a form of interview with an emphasis on documentation of a dynamic interaction within the group and the joint construction of meaning (Morgan, 2008; Bryman, 2012). Flick (2006, p. 197) stressed that focus group discussions involve '*interactive aspect of data collection*'. Silverman (2010) argues that the main advantages of focus group discussions are: collection of data from a large number of participants in a relatively short time; provision of a more 'natural' environment for the discussion; emergence of numerous communicative

processes that are less common when using other approaches (i.e. storytelling, joking, arguing or teasing between the participants in the same community). The purpose of focus group discussions in this study was to explore in-depth options for improving contract farming in Malawi based on identified challenges with stakeholders revealing their views, attributing priorities to issues they considered important and challenging each other's opinions. Focus group discussions involved, in total, 12 participants, lasted around 90 minutes and were audio recorded with prior consent. A detailed guide for focus group discussion is located in Appendix 4.

7.4.1.4. Observations

Observations on the field were used to supplement collected material. Notes, digital camera and samples were used while observing the price of paprika in three supermarkets, capturing the process of marketing and documenting the difference between paprika grades.

7.4.2 Sampling for Qualitative Approach: Non-probabilistic sample

The rationale for selecting two districts was earlier described under section 7.3.3 in this chapter. Also, sampling for focus group interviews was related to sampling for the household questionnaire and is described in section 7.5.2. This section refers to sampling for semi-structured interviews. The interviewees and email correspondents were purposively selected using the logic of a stakeholder sampling where participants are chosen based on their role in an observed phenomenon (Palys, 2008). Therefore, selected stakeholders were implicitly or explicitly part of a paprika supply chain with some considerable roles, responsibilities and relations with the key players. Similarly, experts were purposively selected through reputational-case sampling based on their knowledge and experience in contract farming (Savin-Baden and Major Howell, 2013).

7.4.3 Data Collection Protocol for Qualitative Approach

The protocol of collecting data in qualitative query differed for semi-structured interviews, focus group interviews and discussions. The protocol for semi-structured interviews involved preparing an appropriate interview guide, scheduling the meeting with the interviewee, interviewing and recording the interview. The protocol

for focus group discussions involved preparing appropriate discussion guide with indicated key topics, and scheduling, facilitating and recording focus group discussions. The protocol for the focus group interviews is described below.

Facilitators for the focus group interviews were recruited among Malawian master students from the Lilongwe University of Agriculture and Natural Resources. Local facilitators were preferred over the international ones due to the language advantage. In total, two facilitators were selected: one to facilitate focus group interviews and another to assist with materials and making notes. Selected facilitators had previous experience in conducting focus group interviews, so their training was focused on introducing the topic of contract farming and highlighting the key points in the focus group guide that needed to be covered to complete related research objectives. The desired flow of the focus group interviews was explained, clarified, discussed and agreed with the facilitators.

The role of facilitators in focus group interviews was to encourage and moderate discussion between participants. Although the initial idea was to keep facilitators' presence to the minimum and as less intrusive as possible, occasionally facilitators had to break the long moments of silence and motivate participants to start the discussion (Bryman, 2012). The key role of the researcher in focus group interviews was that of an observer and coordinator because of the language barrier and, to a lesser extent, due to the epistemological stance (Savin-Baden and Howell Major, 2013). During the focus group interviews, facilitators continuously informed the researcher on the most important outcomes of the interviews for each topic and received the guidelines from the researcher on how to direct the interviews. This was done to ensure that the captured data are in accordance with the agreed flow of the interviews. All the interviews with small-scale farmers were audio recorded, transcribed by facilitators and cross-checked by the researcher to make sure all the interview topics were appropriately covered.

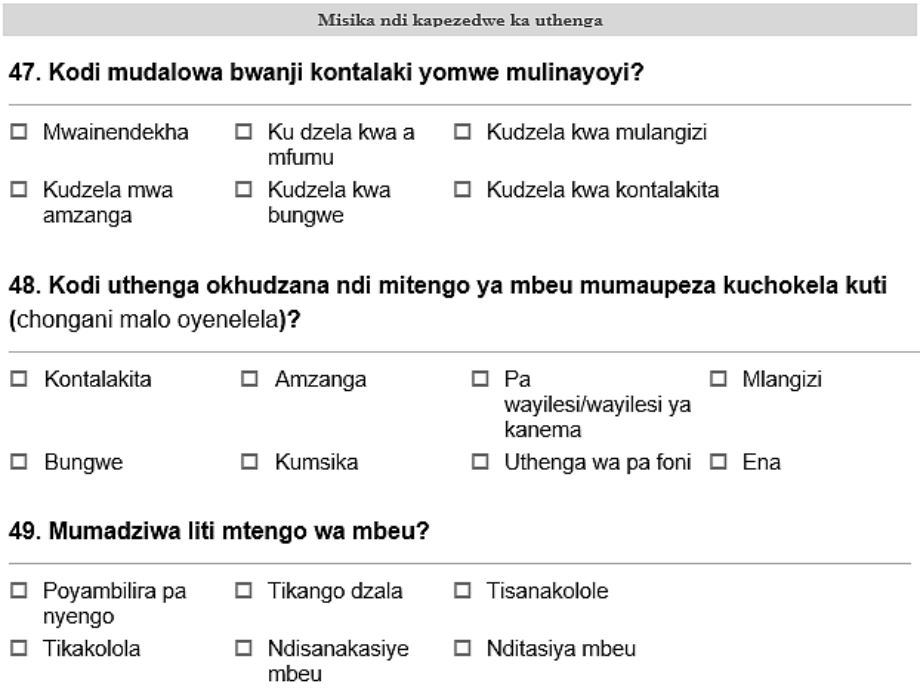
7.5 Quantitative Approach

This section describes the research instruments, sampling method and data collection protocol for the quantitative part of the research approach in the study.

7.5.1 Research Instrument

7.5.1.1 Household Questionnaire

The household questionnaire consisted of 78 questions divided into 11 sections: (i) household characteristics, (ii) contract details, (iii) motivation and satisfaction, (iv) future plans in relation to contracts, (v) input supply and extension services, (vi) meeting the requirements, (vii) communication, relations and networking, (viii) market and information access, (ix) housing and assets, (x) health, education and food security, (xi) farm characteristics. The time needed to complete the questionnaire was approximately 25-35 minutes. The household questionnaire was written and presented to small-scale farmers in the local language (Figure 7.4). In total 10 enumerators administered 428 questionnaires.



Misika ndi kapezedwe ka uthenga

47. Kodi mudalowa bwanji kontalaki yomwe mulinayoyi?

☐ Mwainendekha ☐ Ku dzela kwa a mfumu ☐ Kudzela kwa mulangizi

☐ Kudzela mwa amzanga ☐ Kudzela kwa bungwe ☐ Kudzela kwa kontalakita

48. Kodi uthenga okhudzana ndi mitengo ya mbeu mumaupeza kuchokela kuti (chongani malo oyenelela**)?**

☐ Kontalakita ☐ Amzanga ☐ Pa wayilesi/wayilesi ya kanema ☐ Mlangizi

☐ Bungwe ☐ Kumsika ☐ Uthenga wa pa foni ☐ Ena

49. Mumadziwa liti mtengo wa mbeu?

☐ Poyambilira pa nyengo ☐ Tikango dzala ☐ Tisanakolole

☐ Tikakolola ☐ Ndisanakasiye mbeu ☐ Nditasiya mbeu

Figure 7.4 Excerpt from the administered questionnaire in Chichewa

Table 7.6 shows the distribution of questionnaires in two districts and the related number of small-scale farmers. The total number of respondents in Nkhotakota district was 125 and in Lilongwe district 303. The number of participants was higher in Lilongwe district due to the different size of villages and availability of contracted small-scale farmers, which was taken into consideration (i.e. more participants were selected from bigger villages).

Table 7.6 Number of households participating in questionnaire by area

Area (cluster)	Number of participants
Nkhotakota district (2014), total = 125	
Kasipa	15
Chikhata	15
Nkhala	22
Masewe	20
Chakaka Benga	22
Kamparilo	20
Kaluzamoyo	11
Lilongwe district (2015), total = 303	
Madzianyanja	15
Chawatha	35
Mbalame	190
Chiputu	18
Chowo	45
TOTAL	**428**

7.5.2 Sampling for the Quantitative Approach: Two-stage Cluster Sampling

The participants in the household questionnaire were selected using the cluster-sampling method. The cluster-sampling is considered as a probability sampling method (although on the border), where the population of interest is first organised into geographical clusters and individuals are subsequently randomly selected from clusters (Buckingham and Saunders, 2008). The population considered were all small-scale farmers under a Company D contract for paprika in the Central Malawi. The population was grouped into nine clusters, representing the country's districts. Two districts, namely Nkhotakota and Lilongwe, were purposively selected based on their geographical position and the number of small-scale farmers having contracts for paprika.[70] The list of contracted small-scale farmers was obtained from Company D and two selected districts were then further divided into villages.

The Nkhotakota district consisted of 13 villages of interest where Company D had contracted small-scale farmers. The final choice of villages was narrowed to seven villages within an appropriate geographical distance. The participants for the household questionnaire were randomly selected from the list using the computer generated random numbers method and by initially selecting 10 participants from each village.[71] The focus group interviews were conducted in two villages in Nkhotakota district selected purposively to include female participants. Where applicable, all female participants were included in focus group interviews to maintain gender balance. On the other hand, male participants were randomly selected from a provided list using the computer generated random numbers method. The Lilongwe district contained many villages; hence, two broader locations involving five villages were selected. The same procedure of including participants in the household questionnaire participants, and female and male participants for focus group interviews, was employed. Company D's representatives were not involved in sampling and interviewing of small-scale farmers.

Teddlie and Tashakkori (2009, p. 183) noted that for the 'infinity' population size, the sample size of 384 will give a confidence limit of 0.05, i.e. there is 95% of chance that the sample will represent the population. Since an estimated population of small-scale farmers under Company D contracts for paprika in Malawi is between 10,000 and 15,000 (depending on the season), the sample size of 428 was considered as an appropriate representation.

7.5.3 Data Collection Protocol for Quantitative Approach

Before administering household questionnaires, 10 enumerators were recruited among Malawian masters students from the Lilongwe University of Agriculture and Natural Resources. Since the group had mixed levels of experience in administering questionnaires, the training involved completing the following steps: (i) introducing the purpose of the research; (ii) outlining the key rules in administering

[70] The goal of the purposive sampling was to select two districts that differ in their characteristics so that the study could capture the diverse experiences with contract farming. Some districts had relatively few smallholders under the contract, and they were not selected for this study.

[71] The idea was to keep similar proportions for all villages but the response rate was high as the participants from the spare list wanted to participate, too. Due to cultural norms, participation was not denied to any small-scale farmers. In addition, further in the research, the number of villages reduced but their size increased so the rule of thumb of 10 participants per village was not applicable anymore.

questionnaires (especially to avoid leading respondents to give an appropriate answer); and (iii) ensuring the accuracy and understanding of the questions posed in the questionnaire. The latter step is outlined in Table 7.7 in more detail (see also section 7.3.4.2 for the piloting process).

Table 7.7 Steps for ensuring the accuracy and understanding of the questionnaire

Step	Description
1	Translating the English version of the household questionnaire to Malawian language (Chichewa) by a Malawian PhD student.
2	Distribution of the Chichewa version of the household questionnaire to enumerators and one University representative during the training.
3	Back translating - reading the Chichewa version of the household questionnaire (both questions and provided answers) by each enumerator and translating it back to the English language to cross-check whether the Chichewa version corresponds to the English version.
4	Clarifying the questionnaire and discussing ambiguous, poorly phrased and inaccurate questions and answers with enumerators and the University representative.
5	Correcting the English and Chichewa version of the questionnaire.
6	Piloting of the questionnaires in the field using the first batch of respondents (n = 15, location: Kasipa).

Enumerators played an important role in data collection since they were reading questions to small-scale farmers and recording their answers. The researcher had a key role as an adviser and controller during the data collection. The advisory role was practised through guiding enumerators in cases of unpredicted situations in the field. The controlling role was practised through constant presence on the field during the research to manage and direct questionnaires distribution and dynamics of completion.

7.6 Analytical Framework

7.6.1 Embedding Results

The principle adopted in the analysis is that results from the quantitative query and the qualitative query are separately analysed and represented, and then quantitative results are embedded into qualitative results during the discussion, which serves as

the integration point (Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2009) (see Figure 7.5 for the summary of the research design with analytical framework included). However, while this principle is mostly followed in chapter 10 and 11, in chapter 8 and 9 the quantitative component that serves to describe the profile of small-scale farmers and secure the context dominates the discussion. This is to set the scene for understanding the key challenges and small-scale farmers' 'share' in those challenges and to assess related consequences for small-scale farmers' livelihoods.

7.6.2 Qualitative Data Analysis

7.6.2.1 Thematic Analysis: Template Style

For the qualitative query and textual data collected, a thematic analysis was employed to explore the data, report identified categories and analyse developed themes (Braun and Clarke, 2006).[72] Since the thematic analysis does not imply using any particular theoretical framework, its flexibility enables a more detailed account of data (Joffe, 2012). Hence, the thematic analysis in this study was appropriate for the data-driven analysis employed, allowing the themes to organically evolve from the raw data rather than forcing the interview excerpts into the pre-existing categories.[73] Moreover, the intention of the analysis was to organise the data set around the most salient themes and provide a record on the different perspectives of stakeholders.

A particular form of thematic analysis employed in the study was template analysis, which combines a relatively high degree of structure in analysing the textual data and the possibility to adapt to a certain study (King, 2012). The central point of the template analysis is the development of a coding template that is applied to all the data (King, 2012). In this study, coding templates were developed for different

[72] Braun and Clarke (2006) provided a detailed description of six phases in doing a thematic analysis that were adopted in this study: (1) familiarising oneself with the data, (2) generating initial codes, (3) searching for themes, (4) revising themes, (5) defining and labelling themes and (6) reporting. The template analysis uses all stated phases with more emphasis on developing a code framework (phase 2, 3, 4 and 5).

[73] The exception was made during the third field visit. The pre-existing categories (*What needs to be done? How should it be done? Who should do it?*) were developed prior to focus group discussions and interviews to direct the participants.

research objectives and according to collected data (see final codebooks in Appendix 1).[74]

Once developed, codebooks were then applied, revised and re-applied to materials, providing consistency and direction in the overall analysis. In particular, for analysing Company D's contract, the study used both inductive and deductive approaches to coding (Fereday and Muir-Cochrane, 2006). NVivo™ 10 software facilitated organising and coding data throughout the study.

7.6.2.2 First and Second Cycle Coding

Some data were coded in one and others in two cycles, depending on their characteristics and the research objective (Table 7.8). The first cycle involved structural coding where each question from the interview guide represented one specific code (Namey *et al.*, 2008). The codes were applied to all relevant interview transcripts.[75]

Table 7.8 Overview of coding procedures applied to collected qualitative data by research objectives

Research Objective	**First cycle coding: Structural coding**	**Second cycle coding: Pattern coding**	**Inductive approach to coding***	**Deductive approach to coding***
Supply Chain Dynamics: Roles, Responsibilities and Relations				
Motivation to Enter and Influence of CF on Small-scale farmers' Livelihood				
Key Challenges Identified: Overall Challenges, Contract Design and Side-Selling*				
Options for Improving Contracting Conditions				

* *Note*: Only in the case of contract design,

Source: Author.

[74] The exception was made during the third field visit. The pre-existing categories (*What needs to be done? How should it be done? Who should do it?*) were developed prior to focus group discussions and interviews to direct the participants.

[75] Instead of performing each step of the thematic analysis on each transcript, the codebook is developed, improved and used across all applicable textual data (King, 2012).

The first cycle coding mostly resulted in extracting large sections of textual data collected from participants' interviews and focus groups. The sections were then organised under redefined codes and prepared for the thematic analysis (Saldaña, 2009). When applied, the second cycle coding built upon the first cycle. The pattern coding was used as it relies on results from the first cycle coding to assess the commonality across the data and assign the pattern code to the similar text passages (Miles *et al.*, 2014). In the analysis, as suggested by Saldaña (2009), the pattern coding resulted in constructing statements with an explanatory narrative.

7.6.3 Quantitative Data Analysis

7.6.3.1 Descriptive Analysis

The quantitative data collected were mainly categorical and ordinal. While categorical data denote different categories (e.g. gender, membership in farmers' union and the possession of different assets), ordinal data consist of natural ordering but without the possibility to quantify the distance between categories (e.g. income level, education level and land size) (Gujarati and Porter, 2009). Some initially ordinal data were transformed into categorical data for the purpose of the analysis. The descriptive statistics were used to explore categorical and ordinal data and the results were displayed in cross-tabs with indicated frequencies and percentages. Means and standard deviations were calculated for the variables used in the binary logit regression.

The cross-tabs were created based on the household typology. The typology was developed according to the key concept - contract farming and variables that were considered relevant to contract farming. The guiding principle for the typology was to match the household types with the research purpose and achieve a distinctive simplicity (Daloğlu *et al.*, 2014). Moreover, as Bidogeza *et al.* (2009) emphasised in their study, the typology was established with an expectation that different household types would practice different behaviour towards the studied phenomenon. The literature review provided the case to consider the household income as the variable of interest since previously mentioned studies (see chapter 4 for more details) stated that: (i) contract farming has the potential to increase small-scale farmers' income (Bellemare, 2012; Bolwig *et al.*, 2009; Goel, 2013) and (ii)

better off (medium to larger) farmers are more involved in contracting (Fréguin-Gresh *et al.*, 2012; Fréguin-Gresh and Anseeuw, 2013). Even though this study did not explore farmers' income generation and it focused only on small-size farmers, the income variable was selected to capture potential differences between poorer and wealthier households, in particular regarding contract farming practices and paprika supply chain, which is of interest when making policy recommendations.

In a recent study in Malawi, Franke *et al.* (2014) divided farmers into three types according to their wealth: low, medium and high resource endowment. Dorward (2002) suggested the following typology for Malawi's rural households across the three agro-ecological zones: poor female-headed households, poor male-headed households, less poor households, larger farming households, employed households, borrowers' households and remittance households. However, the latter typology does not entirely fit this study's purpose and (apart from income) another variable was considered in this study - the size of the land allocated to the contracted crop. The choice of this variable was justified by the current gap in knowledge of the information about the profile of households that allocate less/more of their land to the contracted crop and the relevance of this information for the study's purpose concerning policy recommendations and future business practices.

For the purpose of this study, surveyed households were divided into two main groups according to income and land allocated to contracted paprika. Six household types were identified: low monthly income type - LMI (<10,400 MKW/month), medium monthly income type - MMI (10,400-20,800 MKW/month), high monthly income type - HMI (>20,800 MKW/month), small land size allocated to contracted paprika type - SLA (up to 1.6 acres), medium land size allocated to contracted paprika type - MLA (1.6-2 acres) and large land size allocated to contracted paprika type - LLA (>2 acres). In further analysis, surveyed households were divided according to six types and the district where they were located.[76]

[76] Dividing surveyed households by districts and six types provided robust outcomes. Hence, the use of more advanced (e.g. including two or more sub-categories under one household type) was not applied in this study.

In this study, the term 'livelihood' is understood as a set of different factors that enable farmers' living (see chapter 9 for small-scale farmers' livelihood). The following definition from Chambers and Conway (1991, p. 6) was adopted: '*A livelihood comprises the capabilities, assets (...) and activities required for a means of living (...)*'. Three relevant proxies were identified in the literature and used to explore the influence of contract farming on the livelihood of small-scale paprika farmers: productivity (Jones and Gibbon, 2011; Fréguin-Gresh *et al*., 2012; Fréguin-Gresh and Anseeuw, 2013; Rüsch *et al*., 2013), income generation (Miyata *et al*., 2009; Bellemare, 2012; Mwambi *et al*. 2016) and food security (Bolwig, 2012; Bellemare and Novak, 2016). The livelihood proxies were analysed using cross-tabs.

7.6.3.2 Inferential Analysis

Kendall's Tau B Correlation Coefficient and Concordance Coefficient for Ranked Data

Kendall's tau b and Kendall's concordance coefficient (shorter Kendall's W) were used to further explore gathered ordinal data. Kendall's tau b is a non-parametric test of the strength and direction of the association between two ordinal variables (Gibbons, 1993). The output that was interpreted from Kendall's tau b included the value of Kendall's tau b (correlation coefficient) and significance value (*p*-value). Significant results at 5% and 1% are reported and analysed throughout this study. Kendall's W measures the agreement among raters assessing a set of *n* objects of interest (Legendre, 2010). The rank, Kendall's W value and significance value were interpreted.

Kendall's tau b test was used in this study to test the association between (i) the level of importance of key drivers for entering contracts and (ii) satisfaction levels and a set of ordinal variables (see chapter 9, section 9.2.2 and 9.2.4). Kendall's W test was used to determine whether there is an agreement between small-scale farmers, Company D and the enabling environment in rating the key challenges according to their priority (see chapter 11). Both tests were done using SPSS® 21.0 software.

Chi-Square test of association

The Chi-Square test of association was used as a diagnostic tool to inform selection of independent variables in the binary logit regression models. The Chi-square reveals if there exists an association between two categorical variables (Dytham, 2004). The output interpreted from the Chi-square test included the Pearson Chi-Square (χ^2) and significance value. For determining the strength of the association, Cohen's (1988) convention was used where a correlation coefficient of 0.10 is considered as small association, 0.30 as moderate correlation and 0.50 as strong association between the variables.

Binary Logistic Regression

Binary logistic regression allows testing models to predict the outcome of a dependent binary categorical variable (with only two options, i.e. yes, no) by using a set of independent variables (categorical and/or continuous) (Gujarati and Porter, 2009; Pallant, 2011). Binary logistic regression involves three main assumptions (Pallant, 2011):

- A small sample size is usually not appropriate for the binary logistic regression,
- A multicollinearity check is needed to see whether there exists a strong intercorrelation among independent variables, and
- There might exist some cases (outliers) that are not well explained by the model and those cases should be explored.

All three assumptions were accounted for. The sample size refers to the ratio between the number of cases in the study and independent variables in the model. Peduzzi *et al*. (1996) and Agresti (2007) suggested that, for the logistic regression, there should be minimum 10 cases per independent variable. For the models specificed in this study, Model 1 had 11 independent variables, Model 2 had 21 independent variables and Model 3 had 13 independent variables. The ratio was 38 cases per independent variable for Model 1, 19 cases per independent variable for Model 2 and 31 cases per independent variable for Model 3. High levels of multicollinearity could influence the model's results by increasing the standard error of coefficients and making some of the independent variables statistically non-

significant (Gujarati and Porter, 2009). The following rule of thumb was adopted: the multicollinearity was not considered as problematic if the mean VIF was <10 (variance inflation factor) and tolerance values (1/VIF) were >0.1 (Montgomery and Peck, 1992; Gujarati and Porter, 2009; Pallant, 2011).[77]

Multicollinearity test was done using STATA® software and results were reported prior to the regression model output in chapter 8, 9 and 10. The presence of outliers was identified using the '*Casewise listing of residuals*' option in SPSS® 21.0 and cases that were wrongly classified and had *ZResid* value >±2.5 were inspected and removed (Pallant, 2011).

Binary logistic regression was employed in the study in three cases: to determine (i) households' membership in a farmers' union (Model 1), (ii) households' willingness to expand their contract farming arrangement to other crops for which Company D offers the contract (bird's eye chillies and groundnuts) (Model 2), and (iii) households' engagement in side-selling (Model 3). The diagnostic tools for examining the strength of models were the Chi-Square and *p*-value of the whole model (goodness of fit test), Nagelkerke R^2, Cox and Snell R^2 and percentage of cases predicted correctly. Values are reported in each logit regression output table. Pallant (2011) suggested the following benchmarks for assessing the model: *p*-value less than 0.05, Nagelkerke R^2 and Cox and Snell R^2 values as high as possible to explain greater percentage of variability, and as much as cases predicted correctly.

[77] As stated by Studenmund (2011, p. 259), '*the VIF is an index of how much multicollinearity has increased the variance of an estimated coefficient*'. It is worth mentioning that the clear cut-off point for multicollinearity is not yet agreed in the literature and some authors (e.g. Studenmund, 2011, p. 260) recommend an even lower value of VIF (>5 or even >2) to conclude that the multicollinearity between independents is severe. However, in this study, the widely accepted rule of >10 is applied.

Estimating Determinants of Expanding Contracted Production, Participating in Farmer's Union and Side-selling

For all three estimations, it is assumed that small-scale farmers are likely to (i) join the farmer's union, (ii) expand their CF production to new crops and (iii) engage in side-selling if the utility derived from the chosen action is greater than the utility obtained in the current status. This case becomes a binary choice problem, which is expressed as:

$$FUM_i / Ex_i / SS_i = \begin{cases} 1, \; if \; y_i^* > 0 \\ 0, \; if \; y_i^* \leq 0 \end{cases} \quad (1)$$

following Cameron and Trivedi (2010), where *FUM$_i$/Exi/SSi* denotes contracted farmers' engagement in joining the farmer's union/expanding to new CF crop/side-selling. From here:

$$y_i^* = x_i \beta + \varepsilon_i \quad (2)$$

where y_i^* is the latent variable not observable by the researcher and linearly dependent on x_i (vector of observed variables), β is a vector of unknown parameters and ε_i is a random error term (as recently used by Fiamohe *et al.*, 2015; Vessalos *et al.*, 2016). The generalised logit regression model used to model small-scale farmers' membership in farmers' union/expanding CF production/side-selling is written as:

$$Y(x_{ik}) = \frac{\exp(x_{ik}^{'} \beta_k)}{1 + \exp(x_{ik}^{'} \beta_k)} = x_{ik}^{'} \beta_k + u_{ik} \quad (3)$$

where $Y(x_{ik})$ and subscript $_k$ denote three binary logit models compressed into one signle model, exp denotes the exponential function, β[78] is a (N x 1) vector of parameters to be estimated, exponentiated coefficient $\exp(\beta_j)$ represents the odds ratio, $x_i a$ (N x 1) vector of independent variables and u_i is the error term (as in Gujarati and Porter, 2009; Studenmund, 2011).

[78] Note that the Latin letter β is used in the case of side-selling, while letters φ and λ are used for membership in a farmers' union and expanding CF to new crops respectively to distinguish among formulas. The explanation for β, φ and λ are the same.

The selection of independent variables in the analysis was influenced by the empirical literature on contract farming, in particular the work of Nugusse *et al*. (2013), Wang *et al*. (2014), Briones (2015), Girma and Gardebroek (2015), Verhofstadt and Maertens (2015), Kariuki and Loy (2016), Kumar *et al*. (2016), Mwambi *et al*. (2016) and Shumeta and D'Haese (2016). In their studies on determinants of contract farming participation and income effects of contracting, among others, the authors used the following variables: age, education, farm size, distance to market, government support and membership in farmers' cooperatives. All the variables included in the models (Equations 4, 5 and 6) are described in Table 7.9.

The empirical logit model specification used to determine the factors of small-scale farmers' membership in farmers' union/expanding CF to new crop/side-selling is specified as follows:

$$FUM_i = \varphi_0 + \varphi_1 District\_Nkh_i + \varphi_2 Young\_age_i + \varphi_3 Middle\_age_i + \varphi_4 Low\_income_i + \varphi_5 High\_income_i + \varphi_6 Small\_land_i + \varphi_7 Large\_land_i + \varphi_8 Close_i + \varphi_9 Large\_distance_i + \varphi_{10} NGO\_assist_{1i} + \varphi_{11} Government\_assist_i + \varepsilon_i \quad (4)$$

where FUM_i denotes farmers' membership in Farmers Union Malawi, φ_0 is the constant term, $\varphi_1, \varphi_2 ... \varphi_{11}$ are the parameters to be estimated and e_i is the error term. It is expected that households with a young head of household, low monthly income, small landholding size, close distance to the collection point and with received assistance from both NGO and Government are more likely to be members of FUM. In contrast, it is assumed that households with a middle aged head, from Nkhotakota district, with high monthly income, large landholding size and large distance to the collection point would be less likely to be members of FUM.

$$Ex_i = \lambda_0 + \lambda_1 District\_Nkh_i + \lambda_2 Primary\_edu_i + \lambda_3 Secondary\_edu_i + \lambda_4 Medium\_foodexp_i + \lambda_5 High\_foodexp_i + \lambda_6 Small\_land_i + \lambda_7 Medium\_land_i + \lambda_8 Medium\_CF\%_i + \lambda_9 Large\_CF\%_i + \lambda_{10} Low\_yield_i + \lambda_{11} Medium\_yield_i + \lambda_{12} Low\_pestcost_i + \lambda_{13} Medium\_pestcost_i + \lambda_{14} Not\_known/no\_use\_pest_i + \lambda_{15} Low\_fungicost_i + \lambda_{16} Medium\_fungicost_i$$

$$+ \lambda_{17} Not\_known/no\_use\_fungi_i + \lambda_{18} Price\_afterharv_i$$
$$+ \lambda_{19} Price\_before/after\_deliv_i + \lambda_{20} CFincome\_partiallysuff_i$$
$$+ \lambda_{21} CFincome\_notsuff_i + h_i \quad (5)$$

where Ex_i denotes farmers' willingness to expand contracting to other crops, λ_0 is the constant term, λ_1, λ_2 ... λ_{21} are the parameters to be estimated and h_i is the error term. It is assumed that households from Nkhotakota district, with primary and secondary education (household head), high expenses for food/month, large landholding size, low proportion of land allocated to CF, high CF yield/season, low pesticide and fungicide costs, and households who know the price of paprika after the harvest are more likely to expand their contracting to other crops. On the other hand, households with low food expenses for food/month, small landholding size, large proportion of land allocated to CF, low CF yield/season, high pesticide and fungicide costs, and households who know the price of the contracted crop before or after the delivery are less likely to expand their contracting arrangement to other crops.

$$SS_i = \beta_0 + \beta_1 District\_Nkh_i + \beta_2 Primary\_edu_i + \beta_3 Secondary\_edu_i$$
$$+ \beta_4 Low\_income_i + \beta_5 High\_income_i + \beta_6 Low\_foodexp_i$$
$$+ \beta_7 High\_foodexp_i + \beta_8 Close_i + \beta_9 Large\_distance_i$$
$$+ \beta_{10} Positive\_infl_i + \beta_{11} Negative\_infl_i + \beta_{12} Membership\_FUM_i$$
$$+ \beta_{13} Government\_assist_i + v_i \quad (6)$$

where b_0 is the constant term, b_1, b_2 ... b_{13} are the parameters to be estimated and v_i is the error term. It is hypothesised that Nkhotakota district, high monthly income, small land allocated to CF, high expenses for food/month, large distance to the collection point, the negative influence of CF on livelihood and Governance assistance received increase small-scale farmers' probability to engage in side-selling. On the contrary, primary and secondary education, low income, low expenses for food/month, close distance to the collection point, positive influence of CF on livelihood and membership in FUM will decrease small-scale farmers' probability to side-sell.

Table 7.9 Description of the variables used in binary logit models

Variable	Category	Description
Dependent variables		
Membership in FUM	Dummy	Household's membership in FUM (1 if member and 0 otherwise).
Expanding CF	Dummy	Household's willingness to expand its contracted production to other crops (1 if willing and 0 otherwise).
Side-selling	Dummy	Whether the household engaged in side-selling (1 if engaged and 0 otherwise).
Independent variables		
District	Dummy	The district where the household is located (1 if Nkhotakota and 0 otherwise).
Young age	Dummy	Farmers up to 30 years old (1 if <26-30 and 0 otherwise).
Middle age	Dummy	Farmers 30-40 years old (1 if 30-40 and 0 otherwise).
Older age (B)	Dummy	Farmers over 40 years old (1 if >40 and 0 otherwise)
No education (B)	Dummy	Household head does not have official education (1 if no education and 0 otherwise).
Primary education	Dummy	Household head has finished primary level of education (1 if primary education and 0 otherwise).
Secondary education	Dummy	Household head has finished secondary level of education (1 if secondary education and 0 if otherwise).
Low monthly income	Dummy	Households with <10,400 MKW/month (1 if <10,400 MKW/month and 0 otherwise).
Medium monthly income (B)	Dummy	Households with 10,400-20,800 MKW/month (1 if 10,400-20,800 MKW/month and 0 otherwise).
High monthly income	Dummy	Households with >20,800 MKW/month (1 if >20,800 MKW/month and 0 otherwise).
Low food expenses/month	Dummy	Household pays < 5,500 MKW for food per month (1 if food expenses < 5,500 MKW and 0 otherwise).
Medium food expenses/month (B)	Dummy	Household pays 5,500-13,500 MKW for food per month (1 if food expenses 5,500-13,500 MKW and 0 otherwise).
High food expenses/month	Dummy	Household pays >13,500 MKW for food per month (1 if food expenses >13,500 MKW and 0 otherwise).
Small landholding size	Dummy	Households with the size of the entire land for cultivation up to 1.6 acre (1 if up to 1.6 acre and 0 otherwise).
Medium landholding size (B)	Dummy	Households with the size of the entire land for cultivation between 1.6 and 2 acres (1 if 1.6-2 acres and 0 otherwise).
Large landholding size	Dummy	Households with the size of the entire land for cultivation above 2 acres (1 if >2 acres and 0 otherwise).
Small % of land allocated to CF	Dummy	Household allocates up to 10% of the entire land for cultivation to CF crop (1 if up to 10% and 0 otherwise).
Medium % of land allocated to CF (B)	Dummy	Household allocates 10-30% of the entire land for cultivation to CF crop (1 if 10-30% and 0 otherwise).
Large % of land allocated to CF	Dummy	Household allocates 31-50% of the entire land for cultivation to CF crop (1 if 31-50% and 0 otherwise).

Note: B=base category.

Table 7.9 Description of the variables used in binary logit models - *Continued*

Variable	Category	Description
Low CF yield/season	Dummy	Household yielded less than 100 kg of contracted paprika in one season (1 if <100 kg and 0 otherwise).
Medium CF yield/season (B)	Dummy	Household yielded 100-200 kg of contracted paprika in one season (1 if 100-200 kg and 0 otherwise).
High CF yield/season	Dummy	Household yielded over 200 kg of contracted paprika in one season (1 if >200 kg and 0 otherwise).
Close to the collection point	Dummy	Household has <15 min of walk to reach the collection point (1 if <15 min of walk and 0 otherwise).
Medium distance to the collection point (B)	Dummy	Household has 15-30 min of walk to reach the collection point (1 if 15-30 min of walk and 0 otherwise).
Large distance to the collection point	Dummy	Household has > 30 min of walk to reach the collection point (1 if > 30 min of walk and 0 otherwise).
Low pesticide costs/season	Dummy	Household pays up to 3,500MKW for pesticides/season (1 if pesticide costs up to 3,500 MKW and 0 otherwise)
Medium pesticide costs/season (B)	Dummy	Households pays 3,501-6,500 MKW for pesticides/season (1 if pesticide costs 3,501-6,500 MKW and 0 otherwise)
High pesticide costs/season	Dummy	Household pays over 6,500 MKW for pesticides/season (1 if pesticide costs over 6,500 MKW and 0 otherwise).
Not known costs/no use of pesticide	Dummy	Household does not know costs or does not use pesticides (1 if not known costs/no use of pesticides and 0 otherwise).
Low fungicide costs/season	Dummy	Household pays up to 3,500MKW for fungicides/season (1 if pesticide costs up to 3,500 MKW and 0 otherwise)
Medium fungicide costs/season (B)	Dummy	Households pays 3,501-6,500 MKW for fungicides/season (1 if pesticide costs 3,501-6,500 MKW and 0 otherwise)
High fungicide costs	Dummy	Household pays over 6,500 MKW for fungicides per season (1 if fungicide costs over 6,500 MKW and 0 otherwise).
Not known costs/no use of fungicide	Dummy	Household does not know costs or does not use fungicides (1 if not known costs/no use of fungicides and 0 otherwise).
Price known before the harvest (B)	Dummy	Household knows the price for contracted paprika before the harvest (1 if before the harvest and 0 otherwise).
Price known after the harvest	Dummy	Household knows the price for the contracted paprika after the harvest (1 if before the harvest and 0 otherwise)
Price known before or after the delivery	Dummy	Household knows the price for contracted paprika before or after the delivery (1 if before or after the delivery and 0 otherwise).
NGO assistance received	Dummy	Household received assistance from the NGO (1 if received assistance and 0 if not).
Government assistance received	Dummy	Household receives assistance from the Government (1 if received assistance and 0 if not).

Note: B=base category.

Table 7.9 Description of the variables used in binary logit models - *Continued*

Variable	Category	Description
Positive CF influence	Dummy	Contracting positively influenced households' livelihood (1 if positive and 0 otherwise).
No CF influence (B)	Dummy	Contracting did not influence households' livelihood (1 if no influence and 0 otherwise).
Negative CF influence	Dummy	Contracting negatively influenced households' livelihood (1 if positive and 0 otherwise).
CF income sufficient (B)	Dummy	Income gained through CF is sufficient to cover household's needs throughout the year (1 if sufficient and 0 otherwise).
CF income partially sufficient	Dummy	Income gained from CF is only partially sufficient to cover household's needs throughout the year (1 if partially sufficient and 0 otherwise).
CF income not sufficient	Dummy	Income gained from CF is not sufficient to cover household's needs throughout the year (1 if not sufficient and 0 otherwise).

Note: B=base category.

7.6.4 Alternative Approach to Qualitative and Quantitative Analysis

In qualitative analysis, an alternative to thematic analysis is content analysis. The main characteristic of content analysis is its reliability and efficiency in analysing large numbers of textual data often through word counts (Namey *et al.*, 2008). Content analysis is used to analyse the frequency and patterns of usage of certain terms or phrases (Savin-Baden and Howell Major, 2013). Finally, the aim of content analysis is to quantify the content of the data in a systematic and replicable manner (Bryman, 2012). Thus, content analysis is rooted in quantitative research and looks at the manifest content, while the wider context of the data is not considered (Namey *et al.*, 2008; Bryman, 2012). The overall aim of the study was to explore, examine and address key challenges in CF arrangements in Malawi's paprika supply chain (see Figure 7.5 for the summary of the analytical framework). This primarily involves uncovering the context in which those challenges occur, supported by rich data with reasons behind challenges. Since content analysis neglects latent content and the context, thematic analysis was the optimal choice as a qualitative analysis for this study.

There are three main approaches to address the binary response models: the linear probability model (LPM), logit model and probit model (Gujarati, 2004). The linear probability model is the most simple binary regression model. However, this model

has a considerable disadvantage: instead of being in the range 0 to 1, the fitted probabilities can be <0 or >1 (Wooldridge, 2013). The logit and probit models overcome this problem and are often used in the binary response model. Heii *et al*. (2004, p. 444) stated that '*there are often no compelling reasons to choose between the logit and probit model*' but some differences do exist. The probability function in the logit model is the cumulative logistic function while the probit model uses the normal distribution (Gujarati, 2004). Another difference between the two models is in their coefficients. Amemiya (1981) argued that the logit model displays higher coefficients, and that multiplying a probit coefficient by 1.6 will give a matching logit coefficient and multiplying a logit coefficient by 0.625 will result in corresponding probit coefficient. Since logit and probit models give similar results, the logit model was chosen in this study due to its wide usage in social sciences and mathematical simplicity over the probit model (Gujarati, 2004).

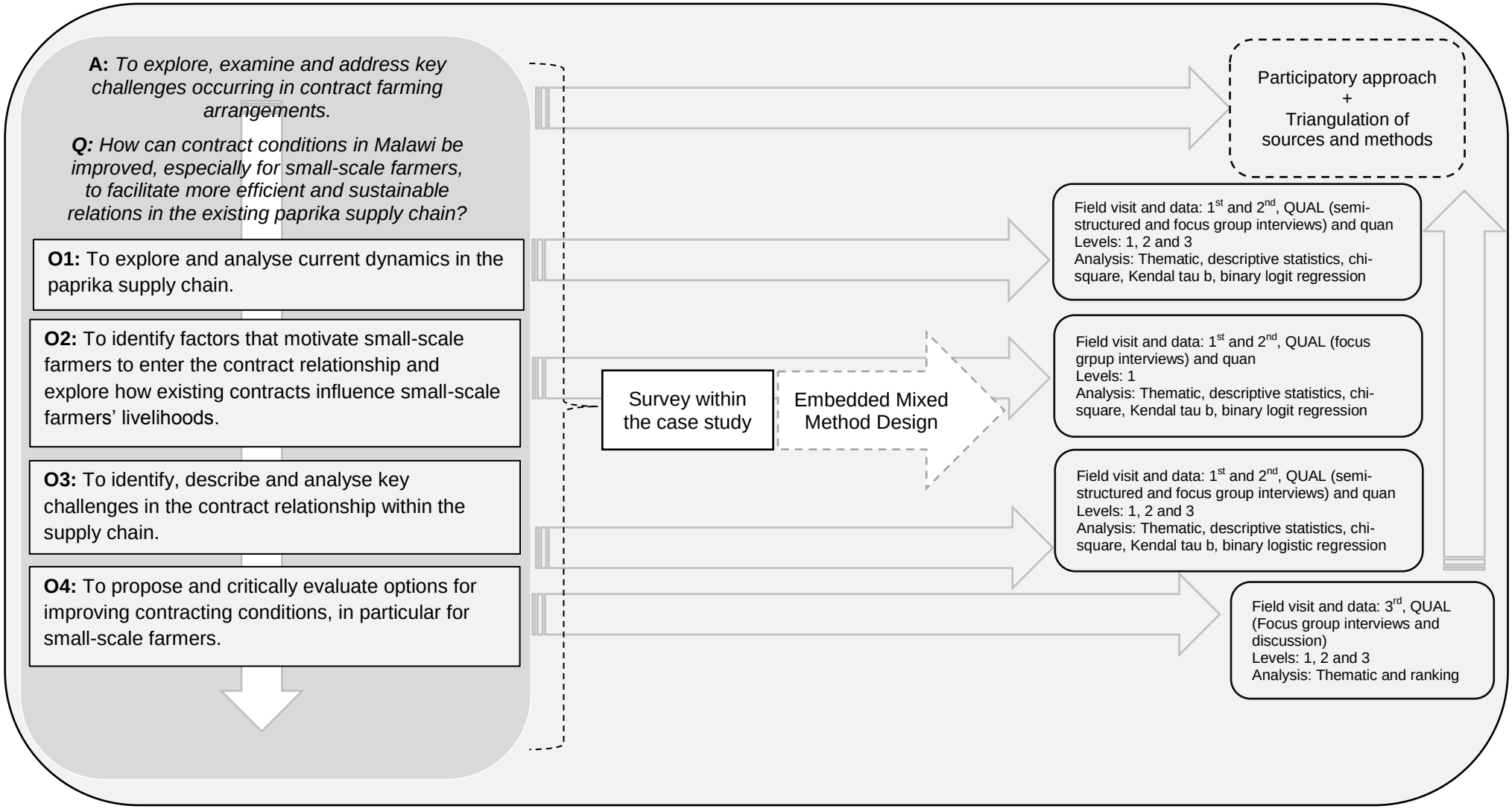


Figure 7.5 Summary of the study's analytical framework

7.7 Ensuring Quality of the Research

This section describes criteria for ensuring quality of the research and outlines how each of the criterion is applied in the study. Krefting (1990) stated that models used to assess the quality of the qualitative and quantitative research differ and should not be assessed using the same strategies. Since the study used mixed methods approach, it mostly relies on Guba's (1981) classification *in Criteria for Assessing the Trustworthiness of Naturalistic Inquiries*.

In the above mentioned text, Guba (1981) proposed four aspects of trustworthiness as a key element in achieving the quality of the research: truth value, applicability, consistency and neutrality. Each aspect is appropriate in a different form in a qualitative and quantitative case. *Truth value* establishes the confidence in the 'truth' of the results and it reflects as credibility in qualitative inquiry and as internal validity in quantitative inquiry. *Applicability* determines to what degree the results can be applied in other contexts or with other subjects. Transferability represents applicability in qualitative inquiry and external validity or generalizability represent it in quantitative inquiry. *Consistency* ensures that the results would be consistently repeated if the same methods were used in an equal (or similar) context or sample. Dependability reflects consistency in qualitative inquiry and reliability reflects it in quantitative inquiry. Finally, *neutrality* establishes the degree to which the results represent the function of subjects' characteristics and research conditions only, that is, they are free from any biases or interest of the researcher. In qualitative inquiry, neutrality is ensured through confirmability, while in quantitative inquiry it shows through objectivity.

7.7.1 Qualitative Inquiry Criteria

Credibility

One of the methods proposed to ensure credibility of the qualitative inquiry is triangulation of theories, data sources, methodologies or researchers (Creswell, 2007; Ivankova, 2014). Thus, to provide credibility, triangulation was considered as one of the key principles in research design and it was applied throughout this study (see Table 7.2.).

Transferability

Related to the applicability of study's findings, qualitative research is often context-specific; thus, one of the methods proposed to increase transferability is collecting a large amount of descriptive data and develop thorough descriptions in order to '*permit comparison of this context to other possible contexts*' and '*make judgements about fittingness with other contexts*' (Guba, 1981, p. 86). In the study, transferability was applied by (i) providing rich data on the context of the study setting, (ii) comparing the results with similar studies done in Malawi and other developing countries, and (iii) comparing the status of the paprika supply chain with theoretical constructs to confirm or reject existing assumptions.

Confirmability

As with research credibility, the triangulation method is recommended to reach confirmability in qualitative inquiry. In particular, this study gathered the data on the key challenges in the paprika supply chain from a '*variety of perspectives*' by involving all three levels and giving them 'the voice' (Guba, 1981, p. 87). This was deemed especially important since challenges are a sensitive issue in the supply chain and different players face different challenges. To keep neutrality and not to be biased towards any party in the contract, data were collected, analysed and interpreted capturing both sides' opinions and supported by views from the enabling environment.

Dependability

Guba (1981) proposed to develop an audit trail to enable an external auditor to assess the process of data analysis and interpretation. This overlaps with developing codebooks (see section 7.6.2.2 in this chapter) for the template style of thematic analysis. Thus, to enhance dependability of the study, Appendix 1 contains a detailed record of codes and categories developed and used in the analysis and interpretation of the data for each research objective. In addition, in the case of analysing contracts, codes were crosschecked with a fellow researcher. The check resulted in over 75% inter-coder agreement (Namey *et al.*, 2008).

7.7.2 Quantitative Inquiry Criteria

Internal validity

The validity can generally be summarised as '*whether operationalisation and the scoring of cases adequately reflect the concept the researcher seeks to measure*' (Adcock and Collier, 2001, p. 529). In other words, validity ensures that the researcher (i) measures what was intended to be measured by (ii) using the appropriate instruments and analysis and that the relative truth is established. Guba (1981) suggested so-called '*member checks*' with relevant human data source groups to test for internal validity. In this study, the checks were done through three steps. First, the key content of the household questionnaire was crosschecked with experts during Skype interviews and by consulting the literature on related issues (i.e. scientific articles were used to identify the key variables and questionnaire examples from FAO, World Bank and National Statistical Office of Malawi were used to structure the socio-economic section of the questionnaire). Second, the questionnaire was corrected in collaboration with enumerators and a representative from the Lilongwe University of Agriculture and Natural Resources. Third, during dissemination of the study's findings, relevant results were presented to small-scale farmers (focus group interviews) and stakeholders (focus group discussion) to scrutinise and discuss them, and thereby confirm or reject their validity and establish the truth.

External validity or generalisability

In quantitative studies, the external validity and generalisability are attempted to be established by ensuring that the results do not depend on chronological or contextual variations; hence, the results will be true in any context (Guba, 1981). The type of quantitative data collected in the study (e.g. age, income categories, satisfaction with the contractor) obviously change over time and are dependent on the context. Therefore, the external validity or generalisability criteria could not be applied in the study due to its overall purpose and nature.

Reliability

The criteria of reliability builds on validity as it suggests that '*measurements should be consistent and repeatable […] an instrument should measure the same thing each time it is used with the same subjects in similar conditions*' (Savin-Baden and Howell

Major, 2013, p. 473). In the study, reliability was provided by (i) detailed description of used instruments for quantitative inquiry and (ii) attaching the entire household questionnaire in Appendix 2, so that the conducted quantitative part of the research can be replicated by any other researchers.

Objectivity

One of the suggested methods of securing objectivity in quantitative inquiry includes explicating used methods that are replicable and removing the researcher from direct contact with participants (Guba, 1981). In the context of this study, it was important to reduce any pressure on respondents to give appropriate answers. This was achieved in two ways. First, the researcher made clear that the purpose of the study was scientific research both in written form (see Appendix 2, Introduction to household questionnaire) and while respondents were addressed each time prior to data collection. The goal was to remove any association with the contractor. Second, enumerators administered questionnaires while the researcher facilitated and controlled the process. In addition, the language barrier here potentially served the criteria of research objectivity as respondents might have felt free to express their opinions knowing that the researcher cannot comprehend them (direct contact is reduced).

7.8 Methodological Limitations

Research limitations in general are outlined in section 1.9 in chapter 1. This section focuses on methodological limitations.

(a) Language barrier

It was not possible to facilitate focus group discussions to achieve more in-depth understanding of small-scale farmers' views due to the obvious language barrier. Although the majority of small-scale farmers understood English, it was deemed more appropriate and efficient to enable them to speak in their local language. The interaction with small-scale farmers was recorded and transcribed, which resulted in the form of focus group interviews that yielded rich and significant data for the study.

(b) Limited role of the researcher

Related to the latter point, the researcher was limited in applying qualitative and quantitative instruments in the case of small-scale farmers. This increased the

dependence on facilitators and enumerators throughout the study. The researcher planned, organised, advised and directed the process of administering the questionnaires and interviewing small-scale farmers. Facilitators and enumerators were repeatedly encouraged by the researcher to behave in good faith.

(c) Confidentiality and accuracy of some data

Some data, such as income levels or Company D's volumes, were considered sensitive since the study addressed (i) vulnerable group and (ii) a real-life business relationship. Thus, Company D requested that some information about volumes would not be mentioned in any written form, which limited possibilities to discuss and compare Company D's operations with other entities. On the other hand, the information given by small-scale farmers on their incomes could be questionable as respondents might be tempted to give untrue responses. Similarly, the information about yields of dry paprika per season provided by small-scale farmers could be over- or under-estimated. Therefore, the focus group interviews were used to gather the information on yields from the group to crosscheck data provided by individuals. In addition, the data collected through semi-structured interviews from the three vendors in Central Malawi were considered confidential since the vendors were in direct competition with Company D for dried paprika and the data they provided contained sensitive business information. The vendors revealed information on their business activities that was not outlined in this thesis in order to respect a given guarantee of confidentiality. Likewise, the guide for the semi-structured interview with vendors is not contained in the Appendices. Limited data were used from the semi-structured interviews with three vendors to triangulate the data from different sources and clarify some situations that occurred in the paprika supply chain.

7.9 Research Ethics

Israel and Hay (2006, p. 2) defined ethical behaviour as one that '*helps to protect individuals, communities and environments, and offers the potential to increase the sum of good in the world*'. The consideration of research ethics thus involves planning, conducting and reporting the research according to ethical principles. Bryman (2012) and Silverman (2013) suggested the following general ethical principles applicable across various disciplines: (i) voluntary participation and the right to withdraw at any stage of the research; (ii) protection of individuals involved

in the research; (iii) assessment of potential benefits or risks for participants; (iv) informed consent; and (v) not doing harm to participants. In addition, the emergence of new internet-mediated research brought other ethical concerns, such as data security and blurred the distinction between the public and private domain online (Hewson et al., 2016).

In this research, the ethical principles were considered in the following context:
Ethical approval prior to the fieldwork: Ethical approval for this research was obtained on 2nd of September 2014 from the Social Research Ethics Committee at University College Cork. The main ethical concerns related to this research were elaborated in the proposal and included: a vulnerable group (small-scale farmers); the confidentiality of some socio-economic data; and the confidentiality of some business data (see Appendix 5).

Informed consent prior to administering a household questionnaire: The first page of the household questionnaire sought informed consent. Informed consent consisted of two parts: a thorough explanation (the purpose of the study, the procedure for completing the questionnaire; selection; voluntary participation; signing the consent form; anonymity; confidentiality; dissemination of the study's results; envisaged risks; and a statement that the research has been approved by the Social Research Ethics Committee from University College Cork) and signing of the informed consent by the respondent and enumerator as a witness (see Appendix 2). Each enumerator was trained and obliged to read the explanation of the informed consent to the small-scale farmer and obtain a signature before administering the questionnaire. Questionnaires without signature were considered as invalid and were not part of the analysed data.

Informed consent prior to facilitating focus group interviews and discussions: Before every focus group interview or discussion, the facilitator or the researcher first briefly introduced the purpose of the study and the focus group dynamics. In addition, participants were informed that they had the right to withdraw from the interview or discussion at any point. Finally, before asking permission to record the interview or discussion, the purpose of recording the event and the importance of research

transcripts was explained. The researcher used the audio recorder only in cases where participants agreed to be recorded.

Informed consent prior to conducting semi-structured interviews: The same procedure was followed for the semi-structured interviews as described in the case of the focus group interviews and discussions. The interviewee was introduced to: the main purpose of the research; informed about the right to withdraw; informed about the importance of recording the interview; and asked for agreement to be recorded.

Confidentiality of some of the data: Due to the confidentiality of some of the data and the anonymity of sources, some information gathered in this research was not revealed in written form (the thesis, the academic manuscripts and presentations). This is particularly related to the identity of the contracting company and data gathered from vendors. Thus, the name of the company was coded as 'Company D' and the interview guides and some responses from the vendors were not communicated.

Data management: To secure the data and ensure confidentiality, the data were kept complete, accurate and in shape for an official retrospective audit. The paper data (household questionnaires, interview transcripts and observations) were stored in locked cabinets and password-protected in electronic form.

7.10 Summary

This chapter described and justified the research methodology used in the study. The key methodological principles in the study involved case study and participatory approach. The study comprised of in total two research sequences: preliminary research and the first two visits, and dissemination of the study's findings. In addition, the study used Embedded Design-Multilevel Model with both concurrent and sequential data collection and QUAL priority to gather the data. Qualitative research instruments included semi-structured interviews with 21 key stakeholders and 10 experts, 2 focus group discussions with key stakeholders, 10 focus group interviews with small-scale farmers and observations. Quantitative research instruments involved 428 household questionnaires. In the next section, the study's results are presented.

PART FOUR: RESULTS AND DISCUSSION

Chapter 8 Dynamics in Paprika Supply Chain

8.1 Introduction

This chapter provides analysis of the collected quantitative and qualitative data with the aim to explore and analyse current dynamics in Malawi's paprika supply chain (*Objective 1*). The chapter also answers the related research sub-questions: *How do key players in the paprika supply chain interact among themselves regarding their roles, responsibilities and relations? What are the characteristics of contracted small-scale farmers? What is the level of small-scale farmers' involvement in farmers' organisations/unions and which factors influence small-scale farmers' membership?*

8.2 Presentation of the Study's Results

The results of the study are presented in the following four chapters (Figure 8.1).

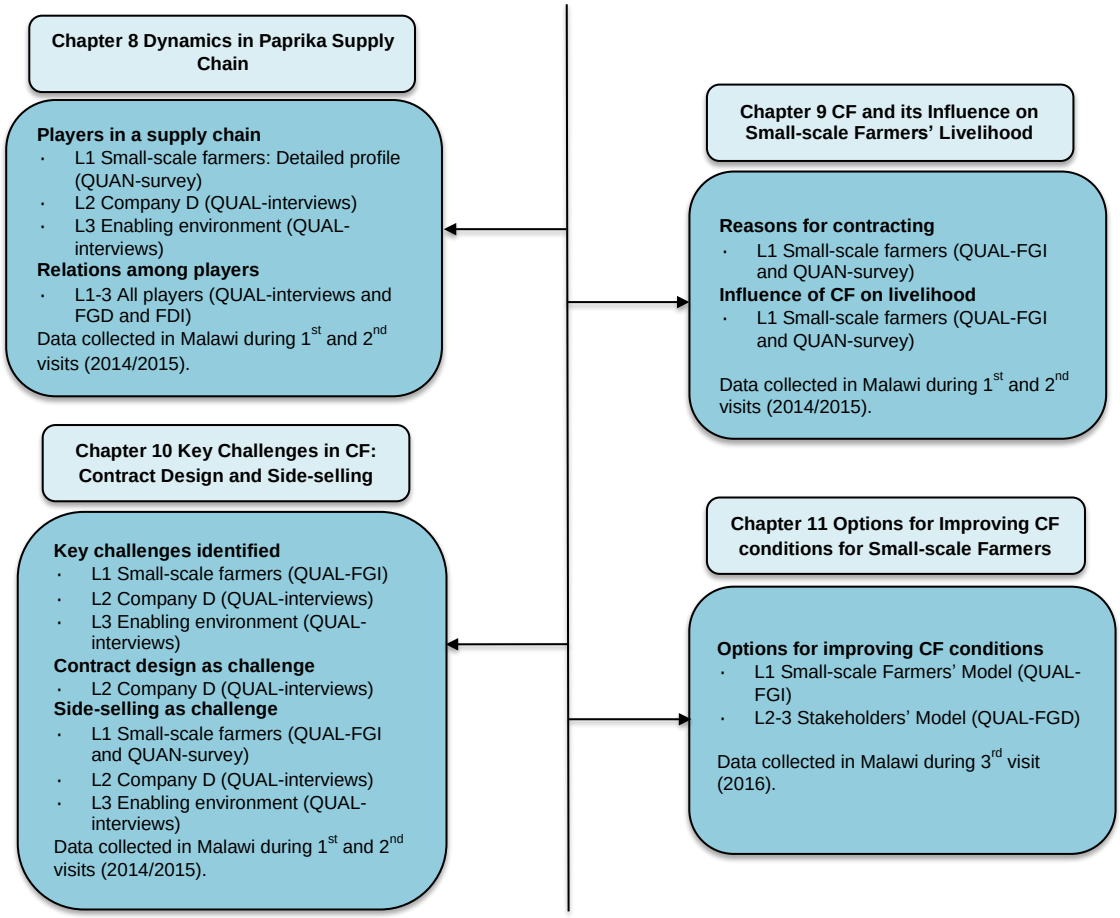


Figure 8.1 Diagram showing the organisation of the study's results

Chapter 8 presents dynamics in the paprika supply chain by first introducing the players in the paprika supply chain and then outlining the relations among players. Chapter 9 identifies the main factors that motivate small-scale farmers to join contracting arrangements and explores how having a contract influences small-scale farmers' livelihood. Chapter 10 emphasises the key challenges found in the paprika supply chain, then focuses on the poor contract design and side-selling practices, and finally discusses how stated challenges reflect in the relationship between the contractor and small-scale farmers. Chapter 11 describes the options for improving contracting conditions proposed by the participants though two models: the Small-scale Farmers' Model and the Stakeholders' Model.

8.3 Players in the Paprika Supply Chain: Roles and Responsibilities

Two main groups were identified in the paprika supply chain: the key players and the enabling environment (Figure 8.2). The key players in the context of this study included small-scale farmers and Company D as the contractor that offered the contract for growing paprika. The enabling environment consisted of two parts representing institutional elements (Government) and supporting services (Universities, consultancy sector, NGOs, civil society, aid organisation and farmers' organisations).

In general, the paprika supply chain in Malawi also involved other players: input providers, vendors (informal buying sector), another contracting company operating in the Northern Region, intermediaries, processors, retailers and further customers, which were not part of this study as the focus was on paprika intended for export. However, the activities of some of these players in the supply chain were substantial.[79]

The *product transformation and flow* for the case study of dried paprika chain consisted of three main phases. In the first phase, small-scale farmers delivered whole dried paprika pods with the stem to Company D. In the second phase, Company D exported whole dried paprika pods to the processor in South Africa.

[79] Roles, responsibilities and relations among input dealers, vendors and the processor of dried paprika in South Africa are briefly considered further in this chapter. End-customers in Germany, Spain and South Africa were not part of this study due to technical limitations, so their contribution in the chain is not considered.

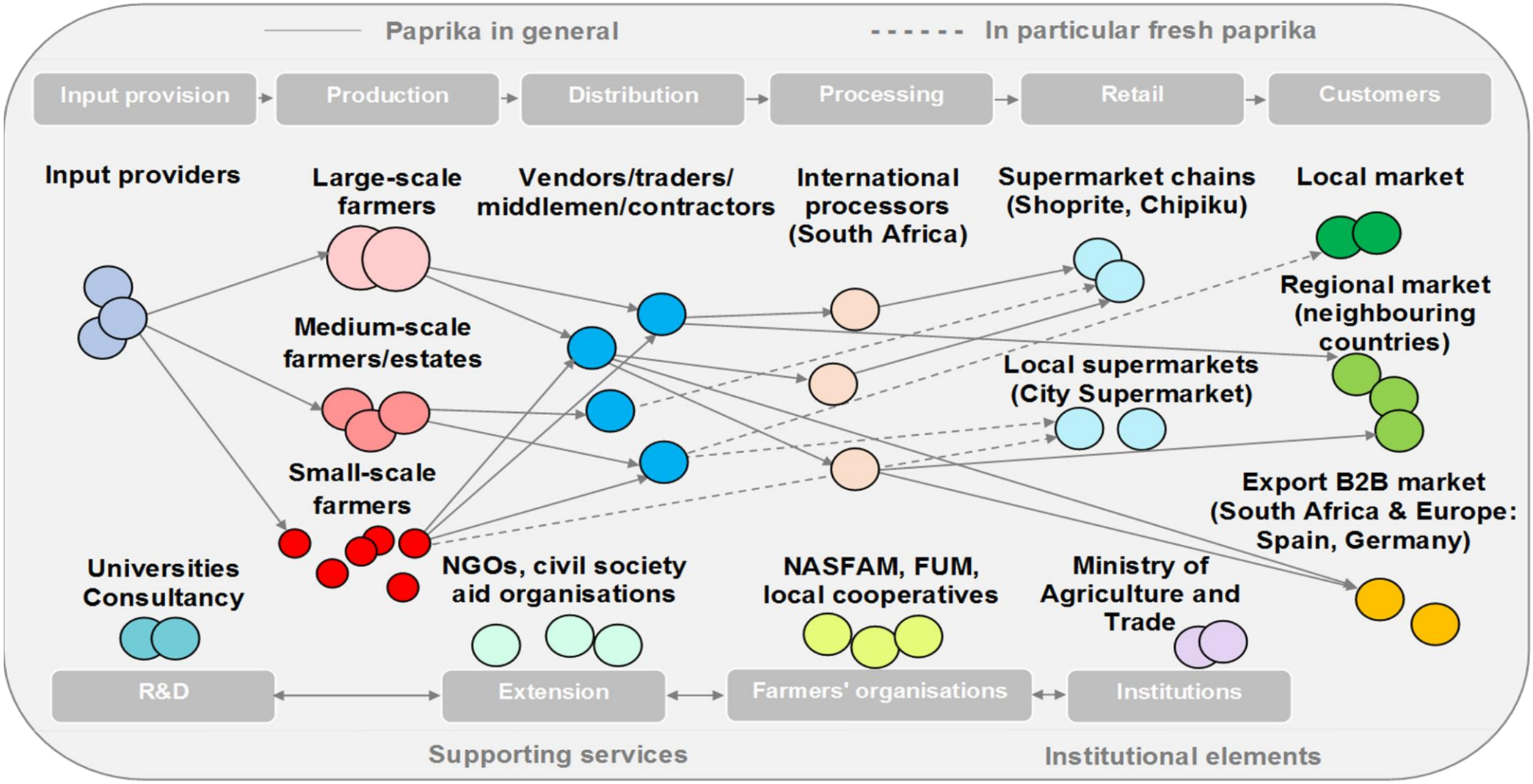


Figure 8.2 Paprika Supply Chain in Malawi

In the final phase, the processor extracted oleoresin from paprika and supplied one customer in South Africa and two customers in Germany.[80]

The *information flow* in the chain was concentrated around the two key players. Company D received information from the processor in South Africa and transformed the information into the request for quality and quantity of paprika to small-scale farmers, associations and NGOs. Small-scale farmers were sharing and receiving information on production and marketing-related practices from Company D, the informal sector, farmers' organisations and NGOs.

The most relevant information on price was based on the situation on the international market and was communicated to small-scale farmers by Company D after the negotiation with the processor in South Africa. Finally, the *financial funds* were *flowing* from Company D to small-scale farmers after supplying paprika, and from the processor in South Africa to Company D upon delivering the commodity.

8.3.1 Small-scale Farmers under the Contract: A Detailed Profile

8.3.1.1 Socio-economic Characteristics of Sampled Households

This sub-section explores various characteristics of small-scale farmers under the contract to understand better farmers' conditions, attitudes and behaviours regarding contracting. Table 8.1 provides details on the socio-economic characteristics of surveyed households with the goal of enhancing the understanding of the background of small-scale farmers who undertake contract farming for paprika in Central Malawi. The majority of low-income households had a male household head (76%) above 40 years of age (54.8%) and who had completed primary level education (82.7%).

[80] Oleoresin is an extract from paprika, which comes in liquid or semi-solid from and contains the aroma and flavour of paprika (Berke and Shieh, 2012). The end product of paprika from Malawi is oleoresin that customers in Germany and South Africa use for colouring and flavouring in food products.

Table 8.1 Socio-economic characteristics of households in both districts

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels*** ***% of total N*** *(% within the type)*			***Land allocated to CF*** ***% of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Age							
Young age (<26-30)	22.2	10.1 (20.7)	8.2 (24.2)	4 (22)	10 (23.7)	8.2 (20)	4 (24)
Middle age (31-40)	27.3	11.9 (24.5)	10 (30)	5.4 (29.9)	11.4 (27)	12.1 (29.7)	3.7 (22.5)
Older age (>40)	50.5	26.6 (54.8)	15.2 (45.4)	8.6 (48)	20.8 (49.2)	20.6 (50.3)	8.9 (53.5)
Gender*							
Male household head	79	37 (76)	27.4 (81.8)	14.7 (81.9)	32.8 (77.3)	32.3 (78.8)	13.8 (83)
Female household head	21	11.5 (23.5)	6.1 (18.2)	3.3 (18.2)	9.4 (22)	8.7 (21.1)	2.8 (17)
Number of household members*							
Small (Up to 4 members)	35	16.9 (34.6)	13.6 (40.5)	4.7 (26)	16.6 (39.2)	12.2 (29.7)	6.3 (38)
Medium (5-6 members)	36	17.3 (35.5)	10.8 (32.2)	7.7 (42.8)	14.5 (34.2)	14.8 (36)	6.3 (38)
High (>6 members)	29	14.5 (29.8)	9.1 (27.3)	5.4 (30)	11.2 (26.5)	14.1 (34.2)	3.7 (22.5)
Education of household head							
Primary	73.8	40.2 (82.7)	23.1 (69.2)	10.5 (58.4)	31.1 (74)	30.4 (74.3)	12.1 (73)
Secondary	18	4.7 (9.6)	7.2 (21.7)	6.1 (33.7)	6.8 (16)	7.7 (18.8)	3.5 (21.1)
Tertiary	0.5	0 (0)	0 (0)	0.5 (2.6)	0 (0)	0.2 (0.5)	0.2 (1.4)
None	7.5	3.7 (7.7)	3 (9)	0.7 (3.9)	4 (9.4)	2.6 (6.28)	0.7 (4.22)
Adult literacy	0.2	0 (0)	0 (0)	0.2 (1.3)	0.2 (0.5)	0 (0)	0 (0)
Experience in cultivating paprika							
Short (Up to 3 years)	68.5	32 (65.8)	23.1 (69.2)	13.3 (74)	30.4 (71.8)	26.4 (64.6)	11.4 (69)
Medium (4-9 years)	25.9	13.8 (28.3)	8.2 (24.2)	4 (22)	9.8 (23.2)	12.1 (29.7)	4 (24)
Long (>9 years)	5.6	2.8 (5.7)	2.1 (6.29)	0.7 (3.9)	2.1 (5)	2.3 (5.7)	1.2 (7)
Household main occupation							
Farming: crops	72.2	42.8 (87.9)	19.9 (59.4)	9.6 (53.2)	29.9 (70.1)	31.5 (77.1)	10.5 (63)
Livestock	0.2	0 (0)	0 (0)	0.2 (1.3)	0.2 (0.5)	0 (0)	0 (0)
Mixed (crops + livestock)	26.9	5.1 (10.6)	13.6 (40.5)	8.2 (45.4)	12.1 (28.7)	8.6 (21.1)	6.1 (36.6)
Other	0.7	0.7 (1.44)	0 (0)	0 (0)	0 (0)	0.7 (1.7)	0 (0)

Note: *one missing response.

Low-income households reported crop farming as their main occupation (87.9%) and had up to three years of experience in paprika cultivation (65.8%).

Medium- and high-income households did not differ considerably from low-income households regarding socio-economic characteristics. Both types of households had a male household head (MMI=81.8%, HMI=81.9%) with >40 years of age (MMI=45.4%, HMI=48%) and completed primary education level (MMI=69.2%, HMI=58.4%). Crop farming (MMI=59.4%, HMI=53.2%) and mixed farming (MMI=40.5%, HMI=45.4%) were the main occupations of medium- and high-income households. The majority of medium- and high-income households had short experience in paprika cultivation (MMI=69.2%, HMI=74%).

Table 8.1 also indicates that there were similarities in socio-economic characteristics among households with various proportions of land allocated to CF crop. Across all three household types, the household head was male (SLA=77.3%, MLA=78.8%, LLA=83%) with completed primary education level (SLA=74%, MLA=74.3%, LLA=73%). Households were medium (SLA=34.2%, MLA=36%, LLA=38%) to small in size (SLA=39.2%, MLA=29.7%, LLA=38%) and the main households' occupation was crop farming (SLA=70.1%, MLA=77.1%, LLA=63%). Regardless of the land size allocated for contracting purposes, all households had short experience in paprika cultivation (SLA=71.8%, MLA=64.6%, LLA=69%).

The highest percentage of young household heads was found in medium-income households (24.2%) and households that allocated small (23.7%) to large land to CF (24%). Tertiary level education was reported in high-income households (2 respondents) and a household that allocated medium (1 respondent) and large land to CF crop (1 respondent). The highest percentage of long experience in paprika cultivation was recorded in medium-income households (6.29%) and households with the large CF land (7%).

8.3.1.2 Housing and Assets

The vast majority of surveyed households (97%) owned the house where they were living (Table 8.2). However, only 1.4% of all households had access to electricity.

Table 8.2 Housing and ownership of assets in both districts

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Owning the house							
Yes	97	47 (96.6)	32.7 (98)	17.3 (96.1)	40.7 (96.1)	40.4 (98.8)	15.7 (94.3)
No	2.3	1.2 (2.4)	0.7 (2.1)	0.5 (2.59)	1.4 (3.1)	0.5 (1.14)	0.5 (2.81)
Family house	0.7	0.5 (1)	0 (0)	0.2 (1.29)	0.2 (0.5)	0 (0)	0.5 (2.81)
Access to electricity							
Yes	1.4	0.7 (1.44)	0.2 (0.7)	0.5 (2.59)	0.5 (1.1)	0.2 (0.57)	0.5 (2.81)
No	95.3	46.7 (96.1)	32.2 (96.5)	16.4 (91)	39.5 (93.4)	40 (97.7)	15.9 (95.7)
Solar system	3.3	1.2 (2.4)	0.9 (2.8)	1.2 (6.5)	2.3 (5.52)	0.7 (1.71)	0.2 (1.4)
Ownership of assets							
Bicycle	72.4	36.4 (75)	23.6 (70.6)	12.4 (68.8)	30.8 (73)	33.2 (81.1)	8.4 (50.7)
Motorbike	2.3	0.9 (1.92)	0.5 (1.39)	0.9 (5.19)	0.7 (1.65)	0.9 (2.28)	0.7 (4.22)
Radio*	64.7	29.7 (61)	22.2 (66.4)	12.9 (71.4)	27.1 (64)	24.8 (60.6)	12.9 (77.46)
Television *	2.8	0.2 (0.48)	0.7 (2.1)	1.9 (10.3)	1.4 (3.31)	0.7 (1.71)	0.7 (4.22)
Telephone*	8.4	0.5 (1)	4.7 (14)	3.3 (18.2)	2.1 (4.97)	4 (10)	2.3 (14)
Mobile phone	42.3	17.8 (36.5)	15.7 (46.8)	8.9 (49.3)	20.1 (47.5)	16.4 (40)	5.8 (35.2)
Sewing machine	3	1.2 (2.4)	0.9 (2.79)	0.9 (5.19)	1.4 (3.31)	0.7 (1.71)	0.9 (5.63)
Hoes/spades	90.7	41.1 (85)	32 (95.8)	17.3 (96)	41.4 (97.8)	34.3 (84)	14.7 (88.7)
Axe	80.4	36.4 (75)	27.8 (83.2)	16.1 (89.6)	36.7 (86.7)	30.4 (74.2)	13.1 (78.9)
Panga**	79	35.5 (73)	27.8 (83.2)	15.7 (87)	36 (85)	29.9 (73.1)	12.9 (77.5)
Cart	5.4	1.4 (2.88)	1.9 (5.59)	2.1 (11.68)	1.4 (3.31)	2.1 (5.41)	1.9 (11.2)
Bowl	88.6	40.9 (84.1)	31.3 (93)	16.6 (92.2)	41.1 (97.2)	33.4 (81.7)	13.8 (83)

Note: * This question referred to whether the household has access to the asset, meaning that the access can be provided at the community level also and not exclusively as a household's asset, ** panga is a type of machete usually used to cut weeds and clear bushes.

An alternative source of energy (solar energy) was available to 2.4% of low-income households, 2.8% of medium-income households and 6.5% of high-income households. Households with small CF land (5.52%) had better access to the solar system compared to households with medium (1.71%) and large CF land (1.4%).

Concerning transport means, households owned bicycles (72.4%) to a bigger extent than motorbikes (2.3%). The bicycle as an asset was more prevalent in low-income households (75%) compared to medium- (70.6%) and high-income households (68.8%). Households with medium CF land (81.1%) had a higher percentage of bicycles than households with small (73%) and large CF land (50.7%). High-income households (5.19%) and households with large CF land (4.22%) owned the highest percentage of motorbikes.

Households in Nkhotakota and Lilongwe districts had reasonable access to radio (64.7%) and mobile phones (42.3%), and relatively poor access to television (2.8%) and the landline telephone (8.4%). High-income households had better access to radio (71.4%), mobile phone (49.3%), television (10.3%) and the landline telephone (18.2%) compared to low- and medium-income households. Similarly, households with large CF land had better access to radio (77.46%), television (4.22%) and the landline telephone (14%) compared to households with small and medium land allocated to a CF crop.

From remaining assets, the majority of households owned basic farming equipment: hoes/spades (90.7%), axe (80.4%) and the panga (79%). Furthermore, only 5.4% of households owned a cart - mostly high-income households (11.68%) and households with large CF land (11.2%). Sewing machine was owned by 3% of households, in particular by high-income households (5.19%) and households with large CF land (5.63%). A majority of households owned a bowl (88.6%) for preparing, storing or carrying food.

8.3.1.3 Health and Education Expenses

In this study, the costs of health services, schooling (and food) were considered as the most important household monthly expenses.[81]

Table 8.3 indicates how those costs were distributed among different household types.

Table 8.3 Health, education and food expenses in both districts

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Access to health services							
Yes	97.7	47 (97)	33.2 (99)	17.5 (97)	40.9 (96.6)	40.4 (98.8)	16.1 (97)
No	2.3	1.6 (3)	0.2 (1)	0.5 (3)	1.4 (3.4)	0.5 (1.2)	0.5 (3)
Health services expenses/month*							
Low (<2000 MKW)	14.7	11.4 (23)	1.6 (5)	1.6 (9)	4.7 (11)	7.7 (19)	2.3 (14)
Medium (2000-5000 MKW)	31.8	4.3 (29)	11 (33)	6.5 (36)	13.1 (31)	12.1 (30)	6.5 (39)
High (>5000 MKW)	21	6.3 (13)	9.6 (29)	5.1 (29)	8.4 (20)	9.6 (23)	3 (18)
Free	31.3	15.9 (33)	11 (33)	4.4 (25)	15.4 (36)	11 (27)	4.7 (28)
Not known	1.2	0.7 (1.4)	0.2 (1)	0.2 (1)	0.7 (1.6)	0.5 (1.2)	0 (0)
Schooling fees/month							
Low (<5000 MKW)	17.2	10.7 (22)	4.9 (15)	1.6 (9)	7.5 (18)	7.9 (19)	1.9 (11)
Medium (5000-11000 MKW)	14	5.6 (11)	4.7 (14)	3.7 (21)	3.7 (9)	5.4 (13)	4.9 (29)
High (>11000 MKW)	14.3	4.2 (8.6)	5.1 (15)	4.9 (27)	4.9 (12)	7.5 (18)	1.9 (11)
Free	39.5	20.6 (42)	13.8 (41)	5.1 (28)	18 (42)	14.7 (36)	6.5 (39)
N/A	15	7.5 (15)	4.9 (15)	2.6 (14)	8.2 (19)	5.4 (13)	1.4 (8)

Note: * two missing responses.

The majority of households had access to health services (97.7%).[82] Medium- (29%) and high-income households (29%) had a higher percentage of high health costs compared to low-income households, which had the highest percentage of low health costs (23%) within the group. High-income households had the highest percentage of high schooling costs (27%) and low-income households had the highest levels of low

[81] Stated expenses are related to the basic household needs. Expenses for rented land are discussed further in this chapter. Chapter 9 explores in more details the key costs in contract farming activities.
[82] The health services here involve basic services on the local level usually performed by available GP doctors and supporting medical staff.

schooling costs (22%). In terms of free access to services, high-income households had the lowest levels of free access to health services (25%) and schooling (28%) compared to other household types.

8.3.1.4 Roles and Responsibilities of Small-scale farmers

The main role of small-scale farmers in the paprika supply chain was that of a supplier of raw material intended for processing and export purposes. In addition, small-scale farmers (when organised into groups or associations) had the role of a group/association member.[83]

(a) Small-scale farmers as Suppliers

As suppliers, small-scale farmers had the responsibility to deliver paprika at an agreed time and in appropriate quantities and quality to the collection point proposed by Company D. Small-scale farmers were responsible for paprika during cultivation, harvesting, drying and transportation. Especially during the cultivation phase, small-scale farmers' responsibility was to use recommended and allowed chemicals.

Since the contract did not provide any inputs except seeds, small-scale farmers were also solely responsible for procuring appropriate fertilisers, pesticides and/or fungicides. Small-scale farmers were obliged to sell their paprika exclusively to the contractor as part of the contract they signed. When applicable, small-scale farmers were responsible for attending training provided by extension officers from Company D or the Malawian Government. Finally, small-scale farmers had the responsibility to grade their paprika[84] prior to official evaluation and deliver paprika by organising and paying for the transportation themselves.

(b) Small-scale farmers as Members of Group/Association

When part of a group or association related to contract farming activities, small-scale farmers were responsible for attending meetings and discussing relevant points with other members, extension worker(s), NGOs and the contractor. Also, in some villages, the contract has been signed in the group/association's name and members

[83] Roles and responsibilities of small-scale farmers were partially described in the contract.
[84] Small-scale farmers had to separate high grade from the lower grade in sacks and present it to the company's buying team for further assessment. See chapter 9, Box 9.3 for more details.

were obliged to deliver the crop in bulk to be forwarded to the contractor. In general, if part of a group or association, a small-scale farmer was responsible for contributing to the mutual economic benefit and using this channel to market contracted paprika.

8.3.2 Company D

8.3.2.1 Background

(a) Establishing Company D and Starting a Business with Paprika

Company D was established in 2008 and it was developed from initially a private farm founded in 2003 in Malawi. The headquarters of Company D are in London. In 2016, Company D owned estates reaching over 6,000 hectares of land in 7 Malawian districts: Salima, Michinji, Lilongwe, Mzimba, Rumphi, Kasungu and Mangochi (Company D's online source, 2016).[85]

The main idea driving the founding of Company D was:

> *'...building on that concept of working with communities around the estate.'*
> Company D's Project Manager, semi-structured interview, Lilongwe, 2015

Company D started commercial farming with paprika in 2010 after the acquisition of the company that previously dealt with paprika. Company D offered its contracts for cultivating paprika to small-scale farmers (outgrowers)[86] in the same year and building on the existing outgrower programme from the acquired company. The main motivating factors to start contracting with paprika involved: (1) Malawi's advantage in suitable climatic conditions for growing paprika, (2) the market and demand for paprika were present, (3) needed infrastructure was in place from the previous company, and (4) other cash crops (tea, coffee and sugar) require plantations while Company D wanted the crop to be available for cultivation to small-scale farmers. During the course of study (2013-16), Company D was the only official contractor for the dried paprika in Malawi's Central Region.

[85] After official establishment and expansion of the company, Company D still continued to operate on a private investment basis. In addition, since the study was done in Malawi, this section on the company's background briefly covers its activities in Malawi exclusively. However, Company D has operations in other parts of the world too: Guatemala (horticulture), Australia (livestock) and Russia (arable land) (Company D, 2016).

[86] The term 'outgrowers' indicates that the company has its own estates used for large-scale commercial farming but also supplies paprika from small-scale farmers outside its estates.

(b) Supplier Base

Apart from its own estates, Company D supplies paprika from 10,000-15,000 small-scale farmers across Malawi. The supply from small-scale farmers can reach over 65% more volume of paprika compared to the amount grown on Company D estates. At the time of the study, Company D offered contracts for paprika, bird's eye chillies and groundnuts to small-scale farmers.

(c) Social Responsibility, Christian Values and Importance of Paprika for Company D

During the interviews, Company D representatives highlighted that the idea of social responsibility and Christian values determine Company D's operations. This was further explained as follows:

> *'Well, I think it means that it's a business the profits of which are intended to, umm, do some good in the country, rather than just make the profits for the shareholders. [...] So, that's essentially what it means and I think it's really based on the shareholder's Christian principles [...] a desire to do good with one's money.'*
>
> Company D's Project Manager, semi-structured interview, Lilongwe, 2015

Paprika is Company D's biggest export cash crop and it accounts for around 15-20% of Company D's net sale. Moreover, the importance of paprika is in its potential to generate a high-income from a relatively small land area compared to other crops that Company D promotes.

(d) Further Market for Paprika

Company D has a long-term trading relationship with the processing company in South Africa where it transports the majority of dry paprika pods with stems from Malawi. Company D supplies about 55% of processors' paprika material. In addition, Company D sells paprika to other traders in South Africa in smaller volumes; however, at the time of the study, all paprika was sold to the processor.

8.3.2.2 Roles and Responsibilities of Company D

Company D had a role as a buyer of raw paprika in the paprika supply chain. The main responsibilities of Company D included formulating the contract (see chapter 10, section 2: *Contract Design as a Challenge* for more details), screening suppliers,

offering the contract to potential small-scale farmers, supplying seeds for cash to small-scale farmers, organising and delivering extension services, buying raw material from small-scale farmers, grading, packing and transporting paprika to the next buyer (processor) in South Africa. In addition, Company D had responsibility to comply with terms and regulations of national and international trade, in particular regarding allowed levels of aflatoxin in paprika and colour units that determine accepted quality according to ASTA (American Spice Trade Association).[87]

8.3.3 Roles and Responsibilities of the Enabling Environment

8.3.3.1 NASFAM – National Smallholder Farmers Association of Malawi

National Smallholder Farmers Association of Malawi (NASFAM) has a role as a small-scale farmers' representative body in the country and it is the largest small-scale farmers'-owned organisation. NASFAM consisted of 43 associations in 2015, which were based on action groups and farmers' clubs (NASFAM, 2015). NASFAM's core responsibilities thus include providing the market,[88] inputs and training for small-scale farmers and linking interested traders with small-scale farmers. In addition, NASFAM represented small-scale farmers' interests during the process of developing the national Contract Farming Strategy. Box 8.1 outlines NASFAM's vision and mission.

8.3.3.2 FUM – Farmers Union Malawi

The Farmers Union Malawi (FUM) is another farmers' body representative, however, not exclusively devoted to small-scale farmers but also to medium- and large-scale farmers in Malawi. FUM's responsibilities are divided into three areas of influence. First, under institutional development, FUM has the responsibility to mobilise farmers to gather into cooperatives where FUM delivers training to promote efficiency of established cooperatives. Second, under agribusiness and marketing, FUM is responsible for linking farmers' cooperatives to inputs and outputs market and promoting value-addition. Third, under advocacy policy area and especially regarding contract farming, FUM conducts the research to suggest recommendations

[87] Aflatoxins are poisonous chemicals produced by some fungi that are found in or on food and have potential carcinogenic and toxicological effects for humans and animals (Cornell University, 2015).
[88] At the time of the study, NASFAM provided the market for groundnuts, rice, soya, chillies and maize (NASFAM, 2015).

for policy changes and contract farming promotion based on evidence. Figure 8.3 depicts FUM's structure.

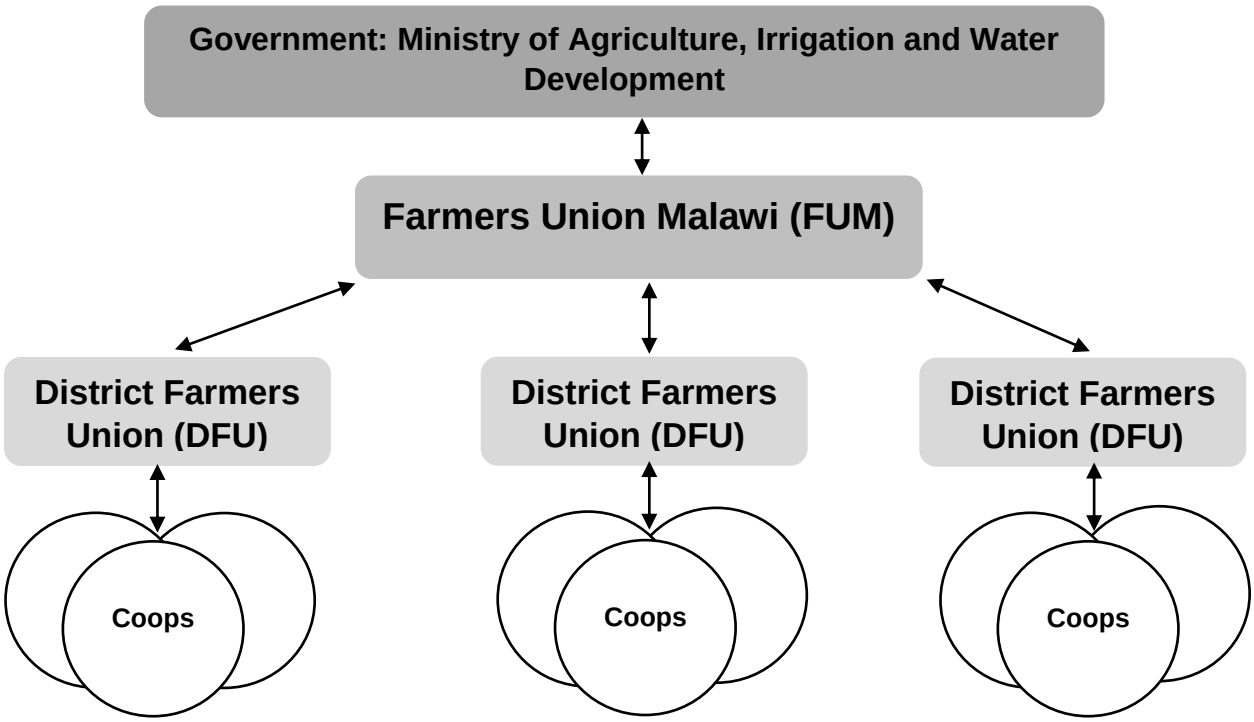


Figure 8.3 The structure of the Farmers Union Malawi

FUM had a similar role as NASFAM in advocating for farmers' interests during consultation meetings for the national Contract Farming Strategy. FUM's vision and mission are further described in Box 8.1. Moreover, FUM has an active part in contract farming since FUM connects buyers with well-established farmers' cooperatives and scrutinises offered contracts, as indicated below:

> *'Because when [buyers] come through us, we scrutinise their contracts...yeah...we will not just get the contract from the buyer and make the farmer sign.'*
>
> Representative from FUM, semi-structured interview, Lilongwe, 2015

BOX 8.1 Vision and mission of key farmers' institutions in Malawi

NASFAM

Vision: To be the leading smallholder owned business and development organisation in Malawi, producing economic and social benefits for members, their communities and the country.
Mission: NASFAM exists to improve the livelihoods of smallholder farmers. Through a sustainable network of smallholder-owned business organisations, NASFAM promotes farming as a business to develop the commercial capacity of its members and delivers programmes that enhance their productivity and innovation.

Source: The Magazine for National Smallholder Farmers' Association of Malawi (obtained in 2014 during the visit to NASFAM, p. i)

FUM

Vision: To ensure a union of Malawian farmer with powerful collective voice to promote and advance the interests of farmers.
Mission: To promote and safeguard interest of all farmers in Malawi, and create a conducive agricultural operating environment for improved agricultural productivity, market access and increased farmer incomes.

Source: Farmers Union of Malawi, brochure (obtained in 2014, during the visit to FUM p. 8).

8.3.3.3 CISANET – Civil Society Agriculture Network

CISANET has a role of a civil society representative influencing positive policy changes in the agricultural sector to enhance agricultural productivity and improve small-scale farmers' livelihoods. CISANET consists of four civil society organisations in Malawi. Its principal responsibility is policy advocacy concerning facilitating dialogues between various stakeholders and the Government. In particular, CISANET acts as a mediator for stakeholders who do not have the capacity to reach other players in the sector. CISANET was also participating in creation of the national Contract Farming Strategy by advocating for the small-scale farmers' interests.

8.3.3.4 Concern Universal – An International Development Organisation

Concern Universal (Concern) is an international development organisation working in Malawi with the main role of linking farmers with markets. Concern's responsibility is working with farmers directly in the form of training on agricultural practices and providing seeds, fertilisers and irrigation intervention, i.e. securing treadle pumps for their beneficiaries. Concern initiates gathering of farmers into groups and connecting them with companies to provide a market for this agricultural produce and increase farmers' negotiation power through collective action. Concern's representatives emphasised that, regarding contract farming relations, their part is facilitation rather than direct involvement. Concern was, in particular, important in this study as small-scale farmers in Nkhotakota were introduced to Company D through Concern.

8.3.3.5 Ministry of Agriculture, Irrigation and Water Development

The government has been so far participating in contract farming through its Ministry of Agriculture, Irrigation and Water Development to the greatest extent. The main role of the Ministry is to develop the national Contract Farming Strategy (Strategy), which will be a leading document for directing contract farming relations among different stakeholders and thus to regulate contracting within the country. The Ministry was involved in promoting and registering farmers' groups and providing agricultural training to farmers through its extension workers. The key responsibility of the Ministry is to set the rules of the game, clarify contract farming principles for all parties, prevent exploitative contracts, create a win-win situation for all parties involved, and to monitor and evaluate the implementation of the Strategy. The representatives from the Ministry highlighted, other than providing extension services, the Government does not intend to interfere with the market (e.g. no subsidies for inputs, outlet for the produce, providing credit or setting prices) but rather is tasked with securing a legal framework for contract farming activities.

8.3.3.6 TLC – Total Land Care (NGO)

TLC is an NGO with distinguished environmental awareness and collaborates with farmers in producing paprika. The key responsibilities include: ensuring that farmers produce adequately using best available technologies and in an environmentally conservative manner, providing farmers with inputs (paprika seed, fertilizers and

chemicals), offering soft loans, encouraging formation of cooperatives and collective marketing, and educating farmers on the benefits of contracting.[89]

8.3.3.7 Research and Academic Units

As part of the supporting services, research and academic units have a role in providing recommendations for improving contract farming conditions. The main responsibilities of these units are: conducting research (in particular case studies), evaluating existing models, structuring guidelines for the Government and companies based on collected evidence, raising awareness about good and bad contract farming practices and suggesting improved models.

8.3.3.8 Consultancy Sector

The consultancy sector shares the same role with research and academic units in recommending needed enhancements in contract farming. From 2008, the consultancy sector produced three studies on contract farming and paprika in the context of Malawi, which were intended to describe the current state in the country and inform stakeholders. The main responsibility of the consultancy sector was to explore a particular topic of interest and produce guidelines on how to improve certain aspects of contract farming.

8.3.3.9 Input Dealers and Processor in South Africa

Input dealers were part of the paprika supply chain with a key role in selling inputs, mainly fertilisers, pesticides and fungicides for paprika cultivation. Processor had the role of buying and processing Company D's raw paprika and exporting it as oleoresin to the European and South African market.

8.3.3.10 Other Players: Vendors and Supermarkets

Vendors' role in the paprika supply chain was to provide an alternative unofficial outlet for small-scale farmers' paprika.[90] Vendors were small- to medium-scale buyers of paprika, mostly located around the capital Lilongwe. The word 'vendor' in

[89] TLC procured inputs from input dealers and offered those to small-scale farmers under the condition that 50% of the input value is paid upfront and the remaining part after the product has been sold.

[90] The role of vendors is described in more detail in chapter 10, section 10.4.

Malawi's paprika supply chain marked two roles of an individual: a buyer of dry paprika from small-scale farmers and seller of that dry paprika to processors. From Lilongwe, vendors operated in the Central Region. Vendors did not provide inputs or training, but they were buying paprika directly from small-scale farmers' farms. In contrast, supermarkets did not play an explicit role in the paprika supply chain because they dealt with the fresh paprika and not the variety intended for the export. Supermarkets represent a potential future channel for small-scale farmers but the key issue that small-scale farmers face related to supplying paprika for supermarkets is the consistency in quality and quantity.

8.4 Relations among Players in the Paprika Supply Chain

Figure 8.4 summarises relations between the players in Malawi's paprika supply chain who were participants in this study.

8.4.1 Small-scale farmers: Communication and Relations

During the focus group interviews, small-scale farmers from the Lilongwe area expressed their concerns regarding the quality of communication with Company D. The communication between the two parties was poor, as farmers stated:

> *'There is little or no communication between us and [Company D].'*
> Focus group interview no. 6, Nkhoma area, Lilongwe district, 2015

> *'The only communication we get is when extension worker comes and tells us that tomorrow [Company D] will start buying the crop at this price.'*
> Focus group interview no. 8, Nkhoma area, Lilongwe district, 2015

However, small-scale farmers were communicating with other players. Figure 8.4 captures the dynamics of relations that small-scale farmers had with players in the studied paprika supply chain. The majority of small-scale farmers established direct communication with Company D's extension worker (87.1%), and high-income households (90%) and households with small CF land (91%) reported the highest number of respondents directly communicating with the extension workers (Table 8.4).

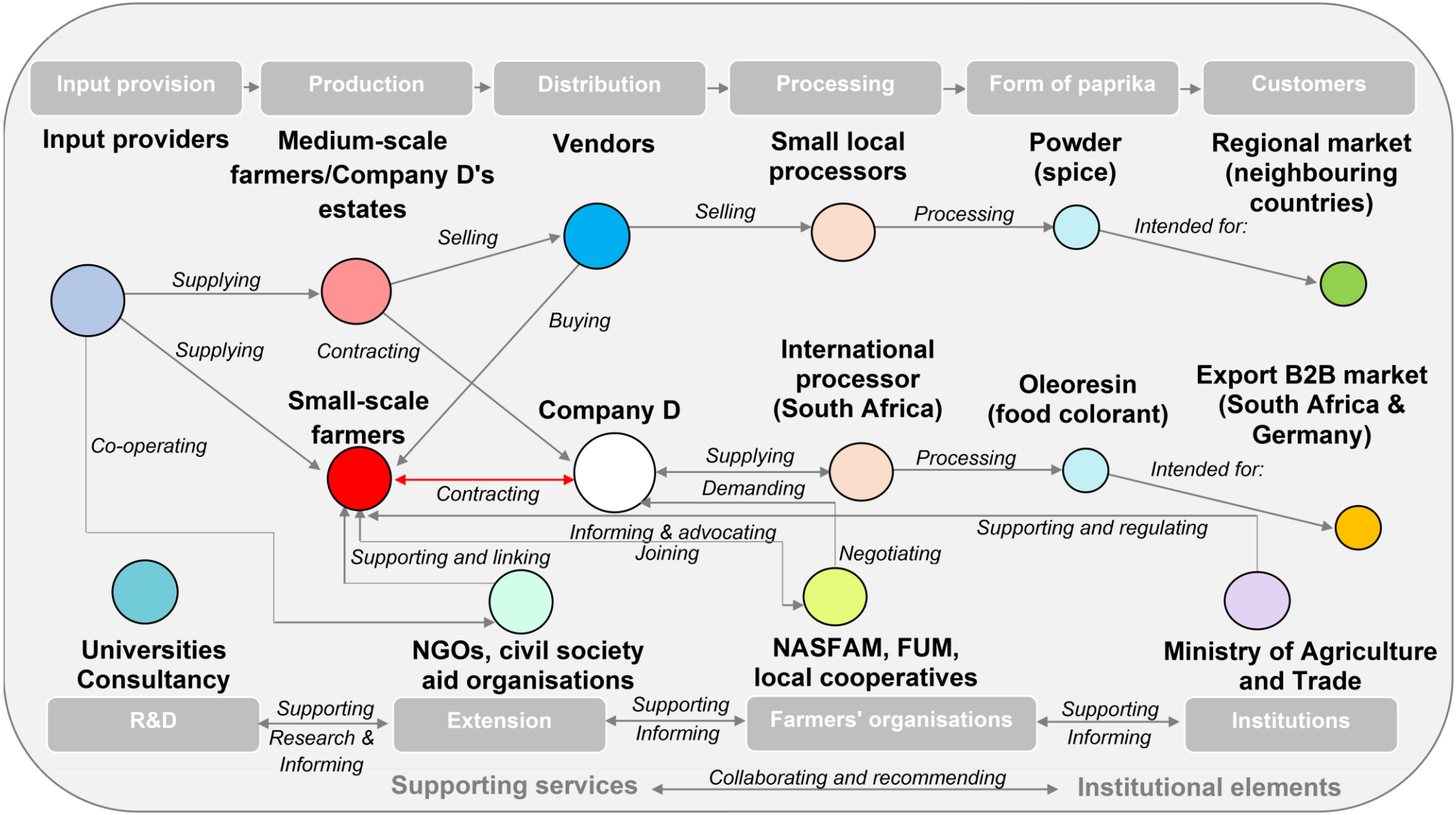


Figure 8.4 Dynamics of relations in the paprika supply chain

Less than one-third of households (28.5%) directly communicated with the contractor: to the greatest extent, those communicating with the contractor were medium-income households (38%) and households with large CF land (41%).

Table 8.4 Communication and entry point for contracting

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Direct communication inside the supply chain							
Contractor	28.5	12 (24.5)	12.6 (38)	4 (22)	7.7 (18)	14 (34)	6.8 (41)
Input dealer	22	0.2 (0.5)	3.3 (9.7)	1.6 (9)	1.4 (3.3)	2.1 (5.1)	1.6 (10)
Extension worker	87.1	42.1 (86.5)	29 (87)	16.1 (90)	38.6 (91)	34.1 (83)	14.3 (86)
Club/organisation	4.4	2.6 (5.3)	0.9 (2.8)	0.9 (5)	2.1 (5)	1.4 (3.4)	0.7 (4.2
None	0.5	0 (0)	0.5 (1.4)	0 (0)	0.5 (1.1)	0 (0)	0 (0)
Point of entry to CF							
Household own initiative	14	6.5 (13.5)	4.4 (13.3)	3 (16.9)	5.6 (13.2)	5.6 (13.7)	2.8 (17)
Village head	4.7	2.6 (5.3)	0.9 (2.8)	1.2 (6.5)	0.9 (2.2)	2.3 (5.7)	1.49 (8.4)
Extension worker	50.9	24.3 (50)	17.8 (53.1)	8.9 (49.4)	19.9 (47)	22.2 (54.3)	8.9 (53.5)
Colleagues	25.9	13.6 (27.9)	8.4 (25.2)	4 (22)	13.3 (31.5)	8.9 (21.7)	3.5 (21.1)
NGO initiative	1.9	1.2 (2.4)	0.5 (1.4)	0.2 (1.3)	1.4 (3.3)	0.5 (1.1)	0 (0)
Contractor	2.6	0.5 (0.9)	1.4 (4.2)	0.7 (3.9)	1.2 (2.8)	1.4 (3.4)	0 (0)

Households in the Lilongwe district had a higher percentage of direct communication with both the contractor (35%) and extension worker (88%) compared to households in Nkhotakota (contractor=14%, extension worker=83%) (based on Table 1.1A in Appendix B). This could be attributed to the fact that the Lilongwe district is considerably closer to Lilongwe city, i.e. Company D's headquarters; thus, visits from the contractor and extension workers might have been more frequent to Lilongwe district compared to visits to Nkhotakota district.

About half of the respondents (50.9%) stated they entered into contract farming through an extension worker and one-fourth of households (25.9) joined contracting

through their colleagues. The respondents were motivated by an NGO initiative to join contract farming to the least extent (1.9%). Medium-income households (53.1%) and households with medium CF land (54.3%) joined contracting through extension workers to the greatest extent. Low-income households (27.9%) and households with small CF land (31.5%) showed the highest percentage in entering the contractual arrangement through colleagues compared to other household types.

From the total number, 58.2% of households were linked to some NGO and 40.2% of households reported they received assistance from an NGO (Table 8.5). Medium-income households and households with a large proportion of land allocated to CF recorded the highest percentage of NGO assistance in the form of training (MMI=47%, LLA=53%) and assistance with production processes (MMI=47%, LLA=45%). Furthermore, only 9.6% of households received assistance from the Government: to the greatest extent, those were high-income households (16.9%) and households with large CF land (21%). Government assistance involved mainly training (HMI=13%, LLA=18%) and help with production processes (HMI=12%, LLA=11%).

Regarding received supporting services, a greater number of households in Nkhotakota district received assistance from an NGO (42%) compared to Lilongwe district (39%), but Lilongwe district had a higher percentage of assistance from the Government (LLW=10%, NKH=8%) (based on Table 1.1A in Appendix B).

A total of 72% of surveyed households stated they were members of a local farmers' association/cooperative/club and that the membership resulted in added value for the household's farming (72.4%) (Table 8.6). The highest level of membership was found among medium-income households (82%) and households with medium CF land (73%). In addition, 40.7% of surveyed households stated they were members of an agricultural cooperative (mostly high-income households: 74% and households with medium CF land: 53%).

Table 8.5 Small-scale farmers' relations with players in the supply chain

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels (% of total N)***			***Land allocated to CF (% of total N)***		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Linkage with NGO							
Yes	58.2	23.4 (48)	24.1 (72)	10.7 (60)	23.8 (56.3)	23.1 (56.6)	11 (66.2)
No	40.4	24.1 (49.5)	9.3 (28)	7 (39)	17.8 (42)	17.1 (42)	5.6 (34)
N/A	1.4	1.2 (2.4)	0 (0)	0.2 (1.3)	0.7 (1.6)	0.7 (1.7)	0 (0)
Assistance received from NGO*							
Yes	40.2	12.9 (26)	19.7 (59)	7.7 (42.8)	13.3 (31)	16.6 (41)	10.1 (60.5)
No	59.6	35.8 (73.5)	13.6 (40.5)	10.3 (57)	29 (68.5)	24.1 (59)	6.6 (39.4)
N/A	0.2	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Assistance received from NGO:							
Training/education	33.2	9.6 (20)	15.7 (47)	7.9 (44)	13.1 (31)	11 (27)	8.9 (53)
With production	32.7	11.4 (23)	15.9 (47)	5.4 (30)	11.7 (28)	13.6 (33)	7.5 (45)
With marketing	7.7	1.4 (2.88)	5.6 (16.8)	0.7 (3.9)	4 (9.4)	3.3 (8)	0.5 (3)
With input provision	4.9	0.7 (1.44)	2.3 (7)	1.9 (10)	2.6 (6.1)	1.4 (3.4)	0.9 (5.6)
With negotiation	6.1	0.7 (1.44)	5.1 (15.4)	0.2 (1.3)	2.3 (5.5)	3.3 (8)	0.5 (3)
N/A or none	54	33.2 (68.2)	12.6 (38.8)	8.2 (45.4)	24.5 (58)	22.9 (56)	6.5 (39.4)
Assistance received from Government*							
Yes	9.6	2.3 (5)	4.2 (12.5)	3 (16.9)	3.5 (8.2)	2.6 (6.2)	3.5 (21)
No	88.3	44.7 (91.8)	29.3 (87.4)	14.5 (80.5)	38.4 (91)	37 (90.1)	12.9 (77.5)
N/A	2.1	1.4 (2.88)	0 (0)	0.5 (2.6)	0.5 (1.1)	1.2 (2.85)	0.2 (1.4)
Assistance received from Government:							
Training/education	7	1.9 (4)	2.8 (8.3)	2.3 (13)	2.3 (5.5)	1.6 (4)	39 (18)
With production	6.1	1.6 (3.4)	2.3 (7)	2.1 (12)	2.1 (5)	2.1 (5)	1.9 (11)
With marketing	1.6	0.2 (0.5)	0.9 (2.8)	0.5 (2.6)	0.9 (2.2)	0 (0)	0.7 (4.2)
Subsidies for inputs	0.5	0 (0)	0.2 (0.7)	0.2 (1.3)	0.2 (0.5)	0 (0)	0.2 (1.4)
With negotiation	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
N/A or none	90	46.3 (95.2)	29 (86.7)	14.7 (82)	38.8 (92)	38.1 (93.1)	12.9 (77.5)

Note: * one missing response.

Moreover, 40.2% of respondents were members of the Farmers Union Malawi (mostly low-income households: 70% and households with small CF land: 47%). Again, for majority of households (72.5%), membership in specific cooperatives/unions had an added value for farming activities.

Table 8.6 Small-scale farmers' membership in organisations

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Membership in local farmers' association/coop/club							
Yes	72	32 (66)	27.6 (82)	12.4 (69)	30.1 (71)	29.9 (73)	11.7 (70)
No	28	16.6 (34)	5.8 (18)	5.6 (31)	12.1 (29)	11 (27)	4.9 (29)
Added value for farming for due to membership							
Yes	72.4	32.5 (67)	27.3 (82)	12.6 (70)	30.1 (71.2)	30.4 (74)	11.7 (70)
No	3	0.9 (1.9)	1.6 (5)	0.5 (2)	1.6 (3.9)	0.7 (1.7)	0.7 (4)
N/A	24.5	15.2 (31)	4.4 (13)	4.9 (27)	10.5 (25)	9.8 (24)	4.2 (25)
Specifically, membership in:							
Credit union	8.2	1.4 (2.88)	4.7 (14)	2.1 (11)	2.8 (6.6)	2.8 (6.9)	2.6 (15)
Trading union	13.6	5.6 (11.5)	7 (21)	0.9 (5)	6.5 (15)	5.8 (14)	1.2 (7)
Agricultural coop	40.7	28.5 (59)	17.5 (52)	13.3 (74)	16.6 (39)	21.7 (53)	4.9 (29.5)
NASFAM	5.1	1.6 (3.36)	2.8 (8.4)	0.7 (4)	1.6 (3.9)	2.1 (5)	1.4 (8)
FUM	40.2	33.9 (70)	16.4 (49)	9.6 (53)	19.9 (47)	14 (32)	6.3 (38)
None	26	17.1 (35)	4.7 (14)	4.9 (27.2)	10.3 (24.3)	10.5 (25.7)	5.6 (34)
Added value for farming due to specific membership							
Yes	72.5	31.5 (65)	28 (84)	13.1 (73)	31.3 (74)	30.1 (74)	11.2 (68)
No	1.5	0.5 (1)	1.2 (3.5)	0 (0)	1.2 (2.8)	0.5 (1.1)	0 (0)
N/A	26	16.6 (34)	4.2 (12.6)	4.9 (27.2)	9.8 (23.2)	10.3 (25.14)	5.4 (32.4)

From surveyed households, low-income households had the lowest levels of membership in the local association/cooperative/club (66%) and received assistance

from an NGO to the smallest extent (26%) compared to all other household types. Households with small CF land had the lowest level of direct communication with the contractor (18%) in comparison with all other household types.

Furthermore, households in Nkhotakota district reported higher levels of overall membership in a farmers' association/cooperative/club (81%) and, in particular, in agricultural cooperatives (56%) compared to Lilongwe district (overall membership=68%, agricultural cooperatives=34%) (based on Table 1.1A in Appendix B). Nevertheless, the Lilongwe district had a higher rate of membership in the Farmers Union Malawi (43%) compared to the Nkhotakota district (34%).

The highest proportion of households involved in a farmers' association/cooperative/club (40.7%) expressed they were very satisfied with the role of the farmers' institution in representing their voice (Table 8.7). Taking into consideration ranking from households that are part of some of the farmers' institutions (NKH=105, LLW=207), both districts were very satisfied (NKH=45.6%, LLW=38.6%). The considerable difference among districts was the lowest score given ('very unsatisfying') as households in Nkhotakota district gave a greater amount of lower scores (4%) compared to households in Lilongwe district (0.3%).

Table 8.7 Rating the satisfaction with the role of farmers' association/cooperative/club in representing farmers' voice

Variable	%		
	Both	NKH	LLW
Very unsatisfying	1.4	4	0.3
Unsatisfying	0.7	0.8	0.7
Neutral	8.4	8	8.6
Satisfying	21.7	25.6	20.1
Very satisfying	40.7	45.6	38.6
N/A	27.1	16	31.7

High levels of satisfaction with a farmers' association/cooperative/club were encouraging. However, extension officers pointed out another issue:

> ‘*Yeah, it's always a bit difficult, because of maybe the culture or so many things that go around in Lilongwe, so each and every farmer wants to stay alone, do things alone. But when you start talking about loans and credit, then they'll say: "Oh, we are in the clubs!" So, these are just the clubs that want to serve the purpose of getting [loans or inputs]. After that, they expire*.’
> Semi-structured interview with two extension field officers from Company D, Lilongwe, 2015

In summary, small-scale farmers were in contractual relationship with Company D, they supplied inputs from input dealers (except the seed), often joined an association/union/cooperative and sold some of their contracted paprika to vendors.

8.4.2 Company D: Relations with Small-scale Farmers and the Enabling Environment

Company D was in direct relationship with three supply chain players: small-scale farmers, a processor in South Africa and Concern. With small-scale farmers, Company D had written contractual arrangements. The relationship with the processor in South Africa was based on trading paprika. Also, Company D was co-operating with Concern in the Nkhotakota district to gather small-scale farmers and organise marketing of the contracted crop.

8.4.3 The Enabling Environment: Relations with Small-scale Farmers, Company D and Environment Members

The enabling environment was interacting with both key players in the supply chain. The representative of institutional elements - Government - was indirectly influencing Company D’s business activities through existing trade and export regulations. The association/union/cooperative served to negotiate favourable conditions for small-scale farmers with Company D. NGOs, civil society and aid organisation were building farmers’ capacities through training and co-operating with Company D in mobilising small-scale farmers for selling paprika. Research units were implicitly informing Company D on the status of contract farming in the paprika sector and recommending future actions.

The enabling environment also developed relations among its members. The Government was directly co-operating with farmers’ body representatives while

developing the Strategy. Some associations/unions/cooperatives were co-operating with input dealers for supplying needed seed and fertilisers through soft loans to small-scale farmers. Also, the high-level association/unions (NASFAM, FUM) were advocating for farmers' interests to the Government. NGOs, civil society and aid organisations were supporting associations in their collective action. Research units were informing and reporting recommendations for improvements to the Government and other representatives of support services in the supply chain.

8.4.4 Estimating the Determinants of Membership in Farmers Union Malawi

The logit regression was used in this section to estimate the determinants of household membership in Farmers Union of Malawi. The information on which variables are more likely to increase the likelihood of being a member in FUM has implications for public policy and attempts of various supporting bodies (farmers' associations and NGOs in particular) to promote and increase the gathering of small-scale farmers into groups. Membership in the union might improve access to the market and provide better contracting conditions through negotiation and because of the economies of scale. Chi-Square tests and a test for multicollinearity were performed prior to the regression estimation. The Chi-Square test was conducted to determine the association between the membership in FUM and following categorical variables: district, age, monthly income, entire landholding size, distance from households to collection point, NGO assistance and Government assistance received.[91]

All expected cell frequencies were greater than 5. The test indicated that there was a statistically significant association between membership in FUM and stated variables (other than the District and Government assistance received, see the explanation below Table 8.8). The association was moderately strong between FUM and NGO assistance ($\chi^2(1) = 39.140$, $p=0.000$, Cramer's $V=0.307$) and weak in all other cases.

[91] All stated categorical variables are described in Table 8.10.

Table 8.8 Chi-Square test for association between being member of the Farmers Union Malawi and the set of categorical variables

Variable	Chi-Square (χ^2)	df	*p*-value	Cramer's V
District$^{\Delta}$	3.167 (2.790)	1	0.075 (0.095)	0.087
Age	6.826*	2	0.033	0.128
Household's monthly income	18.422**	2	0.000	0.210
Entire landholding size	11.787**	2	0.003	0.169
Distance from household to collection point	11.955**	2	0.003	0.169
NGO assistance received	39.140**	1	0.000	0.307
Government assistance received$^{\Delta}$	0.440	1	0.507	0.033

Note: Numbers in brackets report Yate's Continuity Correction and related *p*-value and are calculated in the case of 2x2 tables. $^{\Delta}$District and Government were not statistically significant at 5% and 1% in the Chi-Square test, but both showed to be significant later in the model. District was significant at 10%. * significant at 5%, ** significant at 1%.

Table 8.9 shows that there was no strong multicollinearity among variables as the mean VIF (variance inflation factor) was 1.58, all VIF values were considerably less than 10, while all tolerance values (1/VIF) were greater than 0.1.

Table 8.9 Test for multicollinearity between variables used in binary logistic regression model (STATA output)

Variable	VIF	1/VIF
District	1.23	0.8104
Young age	1.15	0.8699
Middle age	1.69	0.5909
Low monthly income	1.40	0.7129
High monthly income	1.31	0.7634
Small landholding size	2.30	0.4340
Large landholding size	2.37	0.4227
Close to the collection point	1.94	0.5166
Large distance to the collection point	1.86	0.5383
NGO assistance received	1.20	0.8342
Government assistance received	1.15	0.8673
Mean VIF	**1.58**	

Table 8.10 describes variables used as predictors in the binary logit regression model. Table 8.10 indicates that 40.8% of contracted small-scale farmers were members of FUM. About 34.1% of small-scale farmers in Nkhotakota were FUM members, compared to 43.5% of small-scale farmers in Lilongwe.

Table 8.10 Descriptive statistics of the variables used in binary logistic regression

Variable	Membership, %		Mean	SD
	Yes	No		
Membership	40.8	59.2	0.4077	0.4919
Socio-economic variables				
District*	34.1	65.9	0.2950	0.4565
Young age	31.5	68.5	0.2206	0.4151
Middle age	37.4	62.6	0.2758	0.4474
Older age	46.7	53.3	0.5036	0.5005
Low monthly income	30.4	69.6	0.4964	0.5005
Medium monthly income	52.2	47.8	0.3309	0.4711
High monthly income	48.6	51.4	0.1727	0.3784
Household's farm characteristics variables				
Small landholding size	52.1	47.9	0.3373	0.4733
Medium landholding size	38.3	61.7	0.1446	0.3521
Large landholding size	34	66	0.5181	0.5002
Close to the collection point	37.8	62.2	0.4436	0.4974
Medium distance to the collection point	28.9	71.1	0.1990	0.3997
Large distance to the collection point	51	49	0.3573	0.4797
Institutional support variables				
NGO assistance received	58.9	41.1	0.4038	0.4912
Government assistance received	35.9	64.1	0.938	0.2918

**Note:* In Lilongwe district, 43.5% of small-scale farmers were members of FUM.

Older age small-scale farmers (46.7%) and medium-income households (52.2%) were members of the FUM to the greatest extent in respect to the age and income levels. Households with the small landholding size showed higher proportion of membership in FUM (52.1%) in comparison with medium (38.3%) and large landholding size households (34%). Households located at a large distance from the

collection point were members of the FUM in the highest proportion (51%) compared to households at close (37.8%) and medium distance (28.9%). Households that received assistance from the NGO accounted for more FUM members (58.9%) compared to households that received assistance from the Malawian Government (35.9%).

Table 8.11 shows the results of the binary logistic regression performed to assess the effect of 11 predictor variables (district, young age, middle age, low monthly income, high monthly income, small landholding size, large landholding size, close to the collection point, large distance to the collection point, NGO assistance received and Government assistance received) on the likelihood that households will be members of FUM.

The model consisting of all 11 variables was statistically significant, $\chi^2(11, N=417) = 104.64$, $p<0.001$. This model explained 29.9% (Nagelkerke R^2) and 22.2% (Cox and Snell R^2) of the variance in membership of FUM, and it correctly classified 72.9% of cases. Table 8.11 indicates that from 11 predictor variables, seven variables were statistically significant. The small landholding size and Government assistance received were statistically significant at 5%. The district, young age, low monthly income, large distance to the collection point and NGO assistance received were statistically significant at 1%. The strongest predictor variable of membership in FUM was NGO assistance received with an odds ratio of 4.39, which indicated that households receiving NGO assistance were over 4 times more likely to become members of FUM than households who did not receive NGO assistance. Another important predictor variable was the distance from the collection point. Households that were located a large distance from the collection point were 3 times more likely to be members of FUM (odds ratio of 3.76) compared to households with a medium distance to a collection point. Households in the Nkhotakota district were less likely to be members of FUM than households in the Lilongwe district.

Table 8.11 Binary logistic regression estimating determinants of being a member of the Farmers Union Malawi

Variables	Coefficient	S.E.	Wald$^{\Delta}$	*p*-value	Odds Ratio
District	-1.186**	0.309	14.771	0.000	0.306
Socio-economic variables					
Young age	-0.815**	0.300	7.364	0.007	0.443
Middle age	-0.487	0.277	3.098	0.078	0.614
Low monthly income	-0.864**	0.269	10.349	0.001	0.421
High monthly income	-0.345	0.336	1.054	0.305	1.412
Household's farm characteristics variables					
Small landholding size	0.860*	0.359	5.748	0.017	2.364
Large landholding size	-0.099	0.349	0.080	0.777	0.906
Close to the collection point	0.620	0.336	3.403	0.065	1.858
Large distance to the collection point	1.326**	0.350	14.334	0.000	3.767
Institutional support variables					
NGO assistance received	1.481**	0.255	33.820	0.000	4.397
Government assistance received	-0.942*	0.419	5.060	0.024	0.390
Constant	0.618	0.420	2.170	0.141	1.855
Diagnostic statistics					
$\chi_{(11)}^{2}$ (df)	104.64***				
Nagelkerke R^2	0.299				
Cox and Snell R^2	0.222				
Sig.	0.001				
% of cases predicted correctly	72.9%				
N	417				

Note: * significant at 5%, ** significant at 1%. $^{\Delta}$SPSS reports Wald value, which tests the null hypothesis that the value of a single coefficient is equal to 0 (Greene, 2003). Null hypothesis is rejected if Wald value is greater than 2. Wald value is calculated as Wald = (coefficient/S.E.)^2. Wald value is reported in all three binary logistic regression models throughout this study (see chapter 9, section 9.3.6 and chapter 10, section 10.4.3).

Concerning socio-economic characteristics, households with a young household head were less likely to be members of FUM compared to households with an older household head. Low monthly income households were also less likely to be part of FUM compared to medium-income households.

In terms of farm characteristics, households with small landholding size were over two times (odds ratio of 2.36) more likely to be members of FUM than households with medium landholding size. Finally, institutional support from the Government did not play a role in farmers' membership in FUM. Households who received Government assistance were less likely to be part of FUM compared to households that did not receive Government assistance. The result indicated that the following coefficient of variables showed expected sign (see chapter 7, Section 7.6.3.2 on estimating determinants of being a member of FUM): district, middle age head, high monthly income, landholding size, close to the collection point and NGO assistance.

8.5 Discussion

8.5.1 Small-scale Farmers under the Contract

This study showed that the paprika supply chain consisted of the key players and the enabling environment. The key players (small-scale farmers and Company D) organised their roles, responsibilities and relations mainly through the contract. The contract was the centre of Malawi's paprika supply chain. The enabling environment provided institutional and practical support to small-scale farmers and interacted with Company D and with other stakeholders within the chain's environment.

In both the Nkhotakota and Lilongwe districts and across all household types, the majority of household heads were male. This is in accordance with the overall status in Malawi, where about 69% of household heads are males and 31% are females (Malawi Data Portal, 2015). In all categories, household heads were over 40 years old. This suggests that seniors led contracted households. For contract farming, this might be an advantage and a pitfall. On the one hand, older household heads could have more experience with farming in general and might obtain better yields and higher quality crop. Older household heads may have higher levels of respect towards agreed terms and, because of their age, they could have a greater influence in the community to advocate for good contract farming practices and be followed

by other farmers. On the other hand, older household heads may be reluctant to adopt new farming practices suggested by Company D's extension workers as they might have been farming in a traditional way for a number of years. Older household heads might not be able to adapt to new ways of communication with the contractor as fast as younger household heads. The uncertainty about the impact of age on contracting is reflected in the literature exploring factors influencing participation in contract farming. The studies showed that the age of the household head might have positive (Fréguin-Gresh *et al*., 2012; Kumar *et al*., 2016), negative (Sharma, 2008; Bellemare, 2012) or insignificant impacts (Arumugam, 2011; Hu, 2012).

This study showed that in the majority of cases, the education level of the household heads in Nkhotakota and Lilongwe was low. This result is consistent with the national level data from different sources. According to the World Bank (2015), the literacy ratio in Malawi was 61% in 2010. At a district level, the literacy in the Nkhotakota district was 61% and in the Lilongwe district was 57% in 2008 (Malawi Data Portal, 2015). Moreover, 26% of the population in the Nkhotakota district and 35% of the population in the Lilongwe district attained primary level education, while in both districts only 2% of the population obtained secondary level education (Malawi Data Portal, 2015). Thus, contracted small-scale farmers did not derogate from district levels. Concerning contract farming, better education might improve understanding of contracting, especially more complex legal situations such as breach of the contract or the request for termination of the agreement. Education might increase small-scale farmers' capacities to achieve better yields and quality and reward farmers with better incomes. The most recent studies from Mwambi *et al*. (2016) and Kumar *et al*. (2016) suggested that the education level of the household head had a positive significant impact on participation in contract farming.

The majority of households did not have access to electricity. On anational level, 11% of the rural and 36% of the urban population in Malawi had access to electricity in 2009 (Malawi Data Portal, 2015). From respondents, 8.4% of households had access to a telephone, which was higher than the average in the rural Central Region (Malawi Data Portal, 2015). In addition, 42.3% of surveyed households had mobile phones while an average for rural Central Region was 31.5% (Malawi Data Portal,

2015). Access to radio in the studied area (64.7%) was aligned with the average in rural Malawi (63%) (Malawi Data Portal, 2015). Finally, respondents in two districts had poorer access to television (2.8%) compared to an average in the rural area of 5% (Malawi Data Portal, 2015).

The length of experience in cultivating paprika across household types was up to three years, which is a relatively short period. Although paprika is considered to be an attractive cash crop that can have high returns on small landholdings, it is not traditionally the crop grown in Malawi. Introducing paprika farming in other parts of Malawi could entail increased costs for Company D due to the need for appropriate training and risks of failure in the first few years of cultivation. Recent literature confirms that farmers' experience in farming (number of years) has no significant impact on participation in contract farming (Girma and Gardebroek, 2015; Kumar *et al*., 2016). However, Saenz and Ruben (2004), Birthal *et al*. (2005) and Ramaswami *et al*. (2006) found that years of experience had a significantly negative impact on joining contract farming.

8.5.2 Supply Chain Dynamics

The second part of the discussion is centred around the dynamics in the paprika supply chain. Although the contract itself was an agreement between small-scale farmers and Company D, the majority of small-scale farmers directly communicated with Company D's extension workers. This implies that both the importance and the responsibilities of an extension worker were substantial in the paprika supply chain. First, the extension worker had more frequent contact with farmers' communities than any other of Company D's representatives. Second, the majority of Company D's extension workers were Malawians, who were capable of communicating with small-scale farmers in the local language. Third, the extension worker had the responsibility to convey Company D's messages, especially regarding the price for the season and was in charge of buying and collecting paprika during marketing days. Kumwenda and Madola (2005) reported on cases where the company's extension officers abused their position to acquire benefits for themselves. Since Company D operates with a big number of highly dispersed small-scale farmers, it is likely that extension workers will become the core-operating element of contract

farming. It is not impossible that they could occasionally misuse their position at the expense of small-scale farmers and Company D.

Furthermore, 72% of small-scale farmers were members of a farmers' organisation. The advantages of being part of an association, union or cooperative while having a contract are numerous, especially as the association might advocate for farmers' interests while negotiating contracting terms and can obtain inputs in bulk at the reduced price to distribute them to the members. Wanglin and Abdulai (2016) found that membership in a cooperative had a positive significant impact on yields, farm net returns and household income for apple farmers in China, especially small-scale farmers. Chagwiza *et al*. (2016) argued that cooperatives could facilitate commercialisation for small-scale farmers. Abebaw and Haile (2013) suggested that cooperatives could positively influence the adoption of agricultural technology among small-scale farmers. Bellemare (2012) and Kariuki and Loy (2016) concluded that membership in cooperatives or producers' organisations positively influences participation in contract farming.[92]

Despite the considerable enabling environment that surrounds the paprika supply chain, small-scale farmers received only limited assistance from the farmers' organisations, NGOs and the Government. A total of 42% households in Nkhotakota district and 39% of them in Lilongwe district reported receiving assistance from an NGO, while the majority did not receive any assistance from the Government. The reluctance to provide more substantial assistance to contracted small-scale farmers might have the same root for both the Government and NGOs. Specifically, the third party's interference in the contracting relationship can distort relations between small-scale farmers and Company D and result in the failure of this business model. For instance, in cases where an NGO runs the project for subsidising inputs for small-scale farmers, once the project is concluded there might be a gap left behind as small-scale farmers create a dependency on NGO's input provision. Without subsidies, small-scale farmers might not be able to participate in contract farming, which increases transaction costs mostly because Company D has to search for and train new suppliers. If the Government decides to set minimum prices for the

[92] This point is further discussed later in this chapter.

contracted crop and the market volatility causes major fluctuations in the price, Company D may be forced to drop out from contracting as it is not capable of providing the Government's prescribed prices. Thus, the Government and NGOs performed the role of facilitator rather than provider of services in Malawi's paprika supply chain.

The structure of the paprika supply chain in Central Malawi did not differ significantly from paprika chains in neighbouring countries. For example, Stevens (2004) explored the paprika supply chain in Zambia and found that small-scale farmers were selling their paprika to the contractor and the enabling environment involved donor groups and the Government. The paprika was processed into oleoresin and further exported to South Africa and Spain, which is very similar to the situation in the paprika supply chain in Malawi. Furthermore, Kabungo and Jenkins (2016) studied the paprika supply chain in Zambia and reported that the contractor had a dual role. First, the contractor was buying paprika from outgrower small-scale farmers and selling it further on the international export market. Second, the contractor was providing extension services to small-scale farmers (Kabungo and Jenkins, 2016). A similar pattern can be observed in the export paprika supply chains in Malawi and Zambia: (i) small-scale farmers usually had contracts with the contractor, (ii) the contractor further processed paprika or sold paprika to the processor and exported it to neighbouring countries and Europe, (iii) the enabling environment, together with the contractor, supported small-scale farmers regarding extension services.

8.6 Summary

This chapter provided insights into the dynamics of the paprika supply chain in Malawi. The main roles, responsibilities and relations between key stakeholders were described. The chapter also provided a detailed profile of the characteristics of households under contracted production. Chapter 9 closely examined why households join the contract and how it influences their livelihoods.

Chapter 9 Contract Farming and its Influence on Small-scale Farmers' Livelihoods

9.1 Introduction

This chapter provides analysis and interpretation of collected quantitative and qualitative data to identify factors that motivate small-scale farmers to enter contracts and explore how the existing contract influences small-scale farmers' livelihoods (*Objective 2*). This chapter answers these related research sub-questions: *What factors motivate small-scale farmers to enter contracts? How does contracting affect small-scale farmers' livelihood in terms of productivity, income generation and food security? Are small-scale farmers willing to expand their contracting to other crops and which factors influence small-scale farmers' willingness to expand?*

9.2 Reasons for Joining Contracts, Perceptions and Satisfaction Level

9.2.1 Reasons for Contracting: Results from Focus Group Interviews

The key motivating factors for entering contract farming arrangements were explored in both focus group interviews and household questionnaires. Five main reasons for contracting were identified during focus group interviews. First, farmers stated that they joined the contract due to better access to inputs, namely seeds, fertilisers and chemicals.[93]

Second, small-scale farmers considered free extension services for paprika cultivation as an attractive offer in contractual arrangements. Third, small-scale farmers were looking for a market that is accessible and reliable, and they found it through the contractor. Four, the choice of paprika as a contracted crop was also the reason for some small-scale farmers to join contract farming since paprika '*is easily produced with minimal production costs*'[94] (Focus group interview no. 3, Chawatha area, Lilongwe district, 2015). Fifth, some interviewed small-scale farmers believed that the cultivation of paprika has no negative impacts on the environment, which was an additional motivation to enter the contract.

[93] Note that the contract provided the supply of seed for cash (see chapter 10, section 10.3), however, association(s) and NGOs secured easier access to fertilisers and chemicals for small-scale farmers under the contract.

[94] This statement should be interpreted considering the wider context. As shown further in this chapter (section 9.3.2), the production costs for paprika are not negligible; thus, the statement points out on lower costs or investments needed for paprika production compared to other cash crops (e.g. tobacco, tea or coffee).

In addition, Table 9.1 summarises the results from the ranking exercise performed during the focus group interviews with the aim of identifying contract provisions that were considered essential in the small-scale farmers' view. Table 9.1 shows that both districts found extension services, guaranteed market and access to inputs necessary for contracting. Households in the Nkhotakota district valued access to extension services most, while in the Lilongwe district, access to inputs was the primary concern for small-scale farmers joining CF.

Table 9.1 Ranking of the most important provisions in the contract by district generated during the focus group interviews with small-scale farmers

Rank	Nkhotakota district	Lilongwe district
1	Extension services	Access to inputs
2	Guaranteed market	Guaranteed market
3	Access to inputs	Extension services

9.2.2 Reasons for Contracting: Results from Household Questionnaire

The results from household questionnaires also show that the guaranteed market was one of the driving factors for entering into contracts as the highest percentage of small-scale farmers (96.8%) ranked this variable as important (Table 9.2).

Also, stable price (96.5%) and access to inputs (94.9%) were highly important for surveyed households. The least important factor in both districts was access to credit. An observed difference between the two areas was that households in the Lilongwe district reported the highest percentage of importance for a stable price compared to households in the Nkhotakota district that valued the guaranteed market to the greatest extent. Households in the Nkhotakota district gave the greatest percentage of high scores to the following factors: guaranteed market (96%), stable price (94.4%) and access to information (93.6%), which was fairly different compared to results reported from the focus group interviews (see Table 9.1). In contrast, households in the Lilongwe district gave the highest percentage of importance to stable price (97.3%), guaranteed market (97%) and access to inputs (95.8%), which was more in line with the focus group interviews' results.

Table 9.2 Motivating factors for entering CF in both districts

Variable	Not important, %			Neutral, %			Important, %		
	Both	NKH	LLW	Both	NKH	LLW	Both	NKH	LLW
Stable price	0.7	2.4	0	2.8	3.2	2.6	96.5	94.4	97.3
Access to inputs	0.7	1.6	0.3	4.4	5.6	4	94.9	92.8	95.8
Stable income	0.7	0	1	10.7	12	10.2	88.6	88	88.8
Access to information	0.5	0	0.7	5.6	6.4	5.3	93.9	93.6	94.1
Guaranteed market*	1.2	2.4	0.7	1.6	0.8	2	96.8	96	97
Access to credit	6.1	14.4	2.7	11	12	10.6	82.9	73.6	86.8

Note: * one missing response.

Kendall's tau-b test was conducted to assess the relationship between one of the motivating factors for entering CF, and relevant variables measured on an ordinal scale (Table 1.3A in Appendix B). The results show there was a weak, negative and statistically significant association between different levels of importance for the variable 'access to inputs' and household monthly income levels ($\tau_{b=}$ -0.268, p=0.000) and the size of CF land ($\tau_{b=}$-0.282, p=0.000).[95]

This means that the importance of access to inputs for entering contract farming decreases as income levels and the size of CF land increases in the case of the paprika supply chain. Furthermore, the results also show there was a weak, positive and statistically significant association between different levels of importance for the variable 'access to inputs' and household costs for fungicides per season ($\tau_{b=}$0.283, p=0.000). For surveyed households, the importance of access to inputs for entering contract farming increases as households' costs for fungicide increase. Also, the variable 'access to credit' was taken into consideration and the results show that there was a moderate, negative and statistically significant association between different importance levels of 'access to credit' and the size of CF land ($\tau_{b=}$-0.311, p=0.000). The latter implies that the importance of access to credit decreases as the CF land size increases in the case of surveyed households.

[95] Cohen's (1988) criteria for the strength of an association are applied for all results of Kendall's tau-b tests in this study. There are opposite opinions and interpretations of strengths of the correlation (e.g. weak) and statistical significance levels (e.g. high) compared to the practical value of results. Acknowledging this fact, the purpose of running and reporting Kendall's tau-b test in this study is to explore the data and connect it with results from the qualitative inquiry to increase the understanding of the CF phenomenon.

Kendall's tau-b test showed a weak, positive and statistically significant association between different levels of importance for the variables 'access to credit' and households' costs for fertilisers/season ($\tau_{b=}$0.131, p=0.002), costs for pesticides/season ($\tau_{b=}$0.146, p=0.001) and costs for fungicides/season ($\tau_{b=}$ 0.175, p=0.000) (Table 1.3A in Appendix B). These results suggest that the importance of access to credit increases with the increase in households' costs for fertilisers, pesticides and fungicides.

9.2.3 Perceptions of Contract Farming in the Community

Small-scale farmers in the Nkhotakota and Lilongwe districts experienced and elaborated on both the rewarding and challenging sides of contract farming. While the key challenges are reported in-depth in chapter 10, this section addresses more general perceptions on contract farming that existed in communities.[95]

None of the communities participating in focus group interviews was satisfied with contracting conditions, and the overall perception of contract farming in the studied area was that this business model favours the contractor more than small-scale farmers. Nevertheless, small-scale farmers emphasised positive changes that contracting brought into their farming practices and livelihoods. Due to received extension services, small-scale farmers reported they produced higher volumes and quality of paprika, which enabled farmers to achieve a better price. Improved income generation then spilt over to the enhancement of livelihood conditions as small-scale farmers stated they were able to buy needed assets (bicycle, motorbike, radio, plots) or inputs (fertilisers for the next season) or pay school fees for children. When asked to compare their livelihoods with livelihoods of non-contracted paprika farmers, the respondents referred once more to higher volumes, quality and price obtained for the produced paprika. Small-scale farmers concluded that livelihoods of contracted paprika farmers were slightly better compared to the livelihoods of non-contracted farmers in the community. Moreover, small-scale farmers identified the following reasons why non-contract farmers did not operate through the contract: low price

[95] The part on the impact of contract farming on livelihoods is further covered in section 9.3 in this chapter where results from the questionnaire were reported.

compared to the one on the open market, not enough inputs provided and lack of understanding what contracting means.[96]

9.2.4 Satisfaction with the Contractor

When asked about the satisfaction with the current contractor, 58.6% of households stated the relationship was very satisfying (Table 9.3). This is, however, in contrast with opinions expressed in focus group interviews (see section 9.2.3 in this chapter).

Households in the Nkhotakota district gave a lower percentage of the highest positive score (46.4%) to the contractor compared to the Lilongwe district (63.7%). In addition, the Nkhotakota district gave more low scores to the contractor than the Lilongwe district, which suggests that households in the Nkhotakota districts were less satisfied with the relationship compared to the Lilongwe district.

Table 9.3 Household satisfaction with the current contractor

Variable	Satisfaction (%)		
	Both	NKH	LLW
Very unsatisfying	0.5	0.8	0.3
Unsatisfying	1.4	2.4	1
Neutral	13.8	20.8	10.9
Satisfying	25.5	29.6	23.8
Very satisfying	58.6	46.4	63.7

Note: One missing response.

Kendall's tau-b test was conducted to assess the link between household satisfaction with the relationship and relevant variables measured on an ordinal scale (Table 1.4A in Appendix B). The results show there was a moderate, positive and statistically significant association between satisfaction levels for the relationship between the household and the contractor and satisfaction with the farmers' institution in representing the farmers' voice (τb=0.349, p=0.000). This implies that household satisfaction with the contractual relationship increases as the household satisfaction with the farmers' body rises. This result points to the importance of a

[96] Stated reasons for avoiding CF represent a foundation of key challenges that are further described and analysed in chapter 10.

triangle '*contractor – small-scale farmers - farmers' organisation*' and suggests that the farmers' body has an important mediating role to play in the contract farming relationship by efficiently representing and protecting small-scale farmers' interests.

Additionally, the results show there was a weak, positive and statistically significant association between satisfaction levels for the relationship between the household and the proportions of paprika sold to the contractor (τb=0.115, p=0.009). This means that, as the satisfaction with the relationship increased, the proportions sold to the contractor increased. The satisfaction with the relationship might be considered as one of the indicators when analysing side-selling practices as the better the relationship, the lower should be the extent of side-selling. Apart from rating the satisfaction with the contractor, the subsequent question explored how often surveyed households changed contractor (Table 9.4).[97]

The majority of households did not change the contractor (91.8%) but of those who did - high-income households (11.7%) and households with medium CF land (10.9%) expressed the highest percentages across groups. Of those that changed contractor 1-2 times, medium-income households (7%) and households with medium CF land (7.4%) showed the greatest extent compared to other types.

Respondents stated that contracting had an impact on their households (93.9%), and this impact was mainly positive (93.9%). High-income households (97.4%) and households with large CF land (95.8%) showed the highest percentage of positive influence across groups. In contrast, low-income households had the greatest percentage of negative influence recorded among all types (2.4%).

The status at the district level is shown in Table 1.1A in Appendix B. None of the households in the Nkhotakota district reported a negative influence of contracting, while 2.3% of households in the Lilongwe district reported a negative CF influence.

[97] The point of two questions related to the change of contractor was to capture frequencies only, and no assumptions were made on reasons why small-scale farmers changed the contractor. The situation on the paprika market in Central Malawi has been dynamic from 2009 as many players (buyers) vanished and new ones emerged. It is beyond the scope of this study to enter into a deeper analysis of the history of relations in the paprika supply chain; rather the research is focused on the only remaining company that operates in Central Malawi.

Table 9.4 Change of contractor and impact of CF on household's livelihood

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Changing paprika contractor							
Yes	8.2	3.3 (6.7)	2.8 (8.4)	2.1 (11.7)	2.8 (6.6)	4.4 (10.9)	0.9 (5.6)
No	91.8	45.3 (93.3)	30.6 (91.6)	15.9 (88.3)	39.5 (93.4)	36.4 (89.1)	15.7 (94.4)
Times the contractor changed*							
Never	93.2	45.8 (94.2)	30.8 (92.3)	16.6 (92.2)	40 (94.5)	37.4 (91.4)	15.7 (94.3)
1-2 times	5.8	2.3 (4.8)	2.3 (7)	1.2 (6.5)	2.3 (5.5)	3 (7.4)	0.5 (2.8)
3-4 times	0.7	0.2 (0.5)	0.2 (0.7)	0.2 (1.3)	0 (0)	0.5 (1.2)	0.2 (1.4)
5-6 times	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
CF an impact on household**:							
Yes	93.9	45.8 (94.2)	31.8 (95.1)	16.4 (91)	39.3 (92.8)	38.6 (94.3)	15.9 (95.8)
No	4.2	1.4 (2.9)	1.4 (4.2)	1.4 (7.8)	1.6 (3.9)	2.1 (5.1)	0.5 (2.8)
Do not know	1.2	0.9 (1.9)	0.2 (0.7)	0 (0)	0.9 (2.2)	0.2 (0.6)	0 (0)
Participation in CF influences household*:							
Positively	93.9	44.7 (91.8)	31.6 (94.4)	17.6 (97.4)	39.6 (93.4)	38.2 (94.3)	15.9 (95.8)
Negatively	1.6	1.2 (2.4)	0.5 (1.4)	0 (0)	0.5 (1.1)	0.9 (2.3)	0.2 (1.4)
Does not influence	1.9	0.9 (1.9)	0.7 (2.1)	0.2 (1.3)	0.9 (2.2)	0.7 (1.7)	0.2 (1.4)
Not known or N/A	2.6	1.9 (3.9)	0.5 (1.4)	0.2 (1.3)	1.4 (3.3)	0.9 (2.3)	0.2 (1.4)

Note: *one missing response, * three missing responses.

9.3 Influence of Contract Farming on Farmers' Livelihood

9.3.1 Influence of Contract Farming on Productivity

The key variables forming the 'productivity' category in this study are: land, labour, inputs, yield and capacity to deliver agreed quantity and quality of paprika on time. It was observed that paprika was not the only crop that respondents cultivated under

the contract (Table 9.5). Apart from paprika, small-scale farmers had contracts mostly for maize (16.6%) and groundnuts (19.2%). Both maize and groundnuts under the contract were recorded to the greatest extent within medium-income households (maize=25.2%, groundnut=25.9%) and households with medium CF land (maize=21.1%, groundnuts=26.3%) compared to other household types.

Table 9.5 Farm-related characteristics of contracting arrangement

Variable	**Both districts Nkhotakota and Lilongwe (N=428)**						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Crops under CF:							
Paprika	100	48.4	33.4	18	42.3	40.7	16.6
		(100)	(100)	(100)	(100)	(100)	(100)
Bird's eye chillies	0.5	0 (0)	0.5 (1.4)	0 (0)	0.5 (1.1)	0 (0)	0 (0)
Tobacco	7.2	1.9	3.5	1.9	2.1	4	1.2
		(3.85)	(10.5)	(10.4)	(4.98)	(9.7)	(7.04)
Cotton	2.6	0	2.6	0	0.7	1.6	0.2
		(0)	(7.7)	(0)	(1.6)	(4)	(1.41)
Soya bean	9.3	3	5.6	0.7	4.2	4	1.2
		(6.25)	(16.8)	(3.9)	(9.9)	(9.7)	(7.04)
Maize	16.6	5.4	8.4	2.8	4.7	8.6	3.3
		(11.1)	(25.2)	(15.6)	(11)	(21.1)	(19.7)
Groundnuts	19.2	7.7	8.6	2.8	4.9	10.7	3.5
		(15.7)	(25.9)	(15.6)	(11.6)	(26.3)	(21.1)

About half of surveyed households (51.2%) had more than 2 acres of land and around one-third of respondents (32.7%) had up to 1.6 acres (Table 9.6). Large land size was dominant with low- and medium-income household types (LMI=55%, MMI=54%), while high-income households mostly had small land (35%). The majority of households owned their land (94.2%) and did not rent any additional land (73.6%).[98]

Table 9.6 Households' farm characteristics in both districts

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Landholding size*							
Small (Up to 1.6 acre)	32.7	16.9 (35)	9.2 (27)	6.8 (20)	20.7 (49)	11.7 (29)	0.5 (3)
Medium (1.6-2 acres)	15.7	5.2 (11)	6.1 (18)	4.5 (25)	3.8 (9)	4 (10)	8 (48)
Large (>2 acres)	51.2	26.8 (55)	18.3 (54)	6.3 (35)	18.1 (42)	25.4 (62)	7.7 (46)
Ownership over cultivated land*							
Yes	94.2	45.1 (93)	32.7 (98)	16.4 (90)	41.4 (98)	38.6 (94)	14 (84)
No	4	2.3 (4.9)	0.7 (2)	0.9 (5.2)	0.9 (2)	1.6 (4)	1.4 (8)
Family land	1.4	0.9 (2.1)	0 (0)	0.5 (4.8)	0 (0)	0.5 (2)	0.9 (5.6)
Renting the land							
Yes	25.7	12.1 (25)	8.2 (24)	5.4 (30)	9.8 (23)	11 (27)	4.7 (28)
No	73.6	36 (75)	25.2 (76)	12 (70)	32.5 (77)	29.4 (73)	12 (72)
Size of the rented land*							
Small (Up to 1.6 acre)	17.3	8.4 (17)	5.6 (17)	3.3 (18)	7.5 (18)	7.7 (18)	2.1 (13)
Medium (1.6-2 acres)	4.9	2.6 (5.3)	1.4 (4.2)	0.9 (5.2)	1.9 (4.4)	1.4 (3.4)	1.4 (8)
Large (>2 acres)	6.8	2.3 (5)	2.6 (7.7)	1.9 (10)	2.8 (7)	2.3 (6)	1.6 (10)
N/A	70.6	35.4 (72.7)	23.7 (71.1)	11.7 (66.8)	30.2 (70.6)	29.3 (72.6)	11.2 (69)
Expenses for the rented land/season							
Low (>8000 MKW)	9.8	4.7 (10)	3.7 (11)	1.4 (7.8)	4.2 (10)	4.4 (11)	1.2 (10)
Medium (8000-10000 MKW)	7.7	3.7 (7.7)	2.3 (7)	1.6 (9)	2.6 (6)	3 (7)	1.9 (7)
High (>10000 MKW)	10.3	4.4 (9)	2.8 (8.4)	3 (17)	3.7 (9)	4 (10)	2.6 (15)
Not applicable	72.2	35.7 (73.3)	24.5 (78)	11.9 (66.2)	31.8 (75)	29.4 (72)	11 (78)

Note: *two missing responses, **three missing responses.

High-income households had the highest percentage of rented land (30%), rented the highest level of large land (10%) and had the highest rate of high expenses for rented

[98] This section deals with the household's landholding size available for cultivation, and it should not be mistaken with the size of the land allocated to the CF crop (part of the typology).

land (17%) among different income types. Households with small CF land had the highest percentage of small landholding size (49%) compared to households with medium (29%) and large CF land (3%). Households with medium CF land had the highest level of large landholding size (62%), while households with large CF land had the highest proportion of medium landholding size (48%) within the group. In addition, households with large CF land had the highest percentage of large rented land (10%) and higher expenses for rented land (15%) compared to others.

Table 1.1A in Appendix B showed that households in the Nkhotakota district had a higher percentage of small landholding size (39%) compared to households in the Lilongwe district who had higher levels of large landholding size (52%).

Figure 9.1 outlines the composition of food crops grown by surveyed households in the two districts. The majority of households cultivated maize (100%) and groundnuts (90.9%). Soya bean (57.9%), sweet potato (44.4%) and common beans (36.2%) were also among the most grown food crops. Pigeon pea (3%) and carrots (0.5%) were the least represented food crops cultivated in the Nkhotakota and Lilongwe districts.

Although in both districts maize and groundnuts accounted as the most cultivated food crops, the Nkhotakota and Lilongwe districts further differed. In the Nkhotakota district, households mostly cultivated sweet potato (52.8%), rice (42.2%) and cassava (30.4%). In contrast, households in the Lilongwe district mostly cultivated soya bean (69.6%), sweet potato (40.9%) and common beans (39.2%).

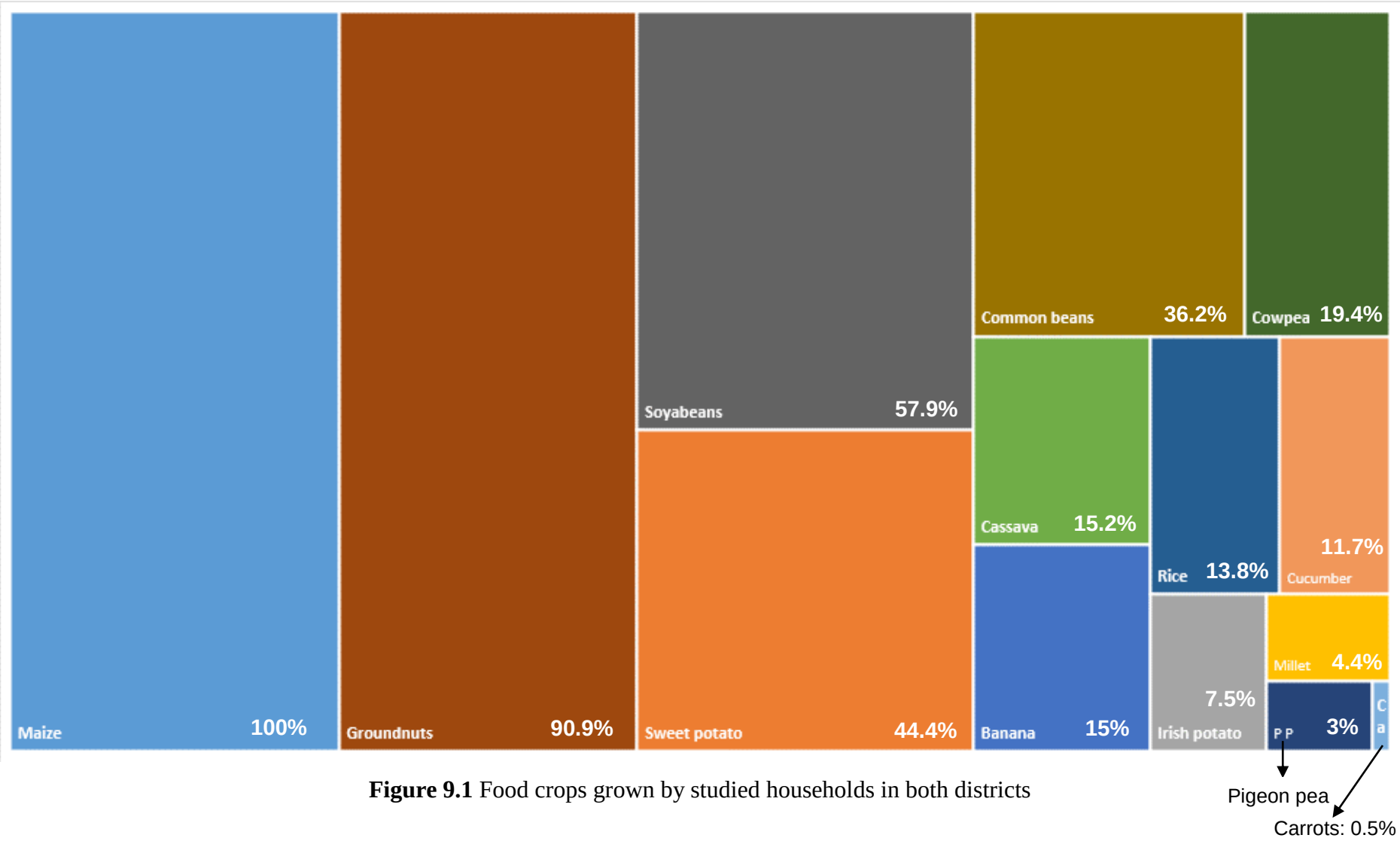


Figure 9.1 Food crops grown by studied households in both districts

The majority of surveyed households allocated small (42.3%) to medium (40.9%) proportions of the land to the contracted crop and only 16.6% of households had large CF land (Table 9.7). The Lilongwe district had more households with a large proportion of land allocated to contracted paprika (19.1%) compared to Nkhotakota (10.4%).

Table 9.7 The size of the land allocated to contracted paprika by districts

Variable	Both districts (% of total N)	Nkhotakota (% of total in NKH)	Lilongwe (% of total in LLW)
Land allocated to CF crop*			
• Small land allocated	181 (42.3)	56 (44.8)	125 (41.3)
• Medium land allocated	175 (40.9)	55 (44)	120 (39.6)
• Large land allocated	71 (16.6)	13 (10.4)	58 (19.1)
Total	428 (100)	125 (29.2)	303 (70.8)

Note: * one respondent answered 'Do not know', which is not included in this table.

Low-income households mostly allocated medium (46.15%) or small size land (42%) to paprika (Table 9.8). Similarly, medium-income households had small (43%) or medium CF land (38.5%). High-income households also allocated small (41.5%) to medium land (31.2%) for contract farming but had the greatest proportion of large CF land (27.3%) among all household types.

Table 9.8 Distribution of the land allocated to CF crop by income levels

Variable	Districts								
	Both ***% of total N**** *(% within the type)*			***Nkhotakota*** ***N in NKH**** *(% in NKH)*			***Lilongwe*** ***N in LLW*** *(% in NKH)*		
	LMI n=208	MMI n=143	HMI n=77	LMI n=45	MMI n=44	HMI n=36	LMI n=163	MMI n=99	HMI n=41
Small land allocated	20.3 (42)	14.5 (43)	7.5 (41.5)	17 (13.6)	20 (16)	19 (15.2)	70 (23)	42 (13.9)	13 (4.3)
Medium land allocated	22.4 (46.15)	12.9 (38.5)	5.6 (31.2)	21 (16.8)	22 (17.6)	12 (9.6)	75 (24.8)	33 (10.9)	12 (4)
Large land allocated	5.6 (11.5)	6.1 (18.18)	4.9 (27.3)	6 (4.8)	2 (1.6)	5 (4)	18 (5.9)	24 (7.9)	16 (5.3)

Note: * one missing response, ** three missing responses.

Both in the Nkhotakota and Lilongwe districts, low- and medium-income households mainly allocated medium and small proportions of their land to contracted paprika production. High-income households in the Nkhotakota district mostly had small CF land (15.2%), while in the Lilongwe district, the majority of high-income households had large CF land (5.3%). The proportion of large land allocated to the CF crop in the paprika supply chain was 10.4% and 19.1% for the Nkhotakota and Lilongwe districts respectively (Table 9.8).

The majority of the surveyed households (49.1%) allocated 10-30% of their available land for growing paprika under contract (Table 9.9). Low-income households mainly had low amount of land allocated to CF (27%) expressed in percentage of total land.[99]

Table 9.9 Farm-related characteristics of contracting arrangement

Variable		Both districts Nkhotakota and Lilongwe (N=428)					
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Land allocated to paprika in %*:							
Low (<10 %)	20.6	13.1 (27)	3.5 (10.5)	4 (22.1)	14.3 (33.7)	5.4 (13.1)	0.7 (4.22)
Medium (10-30%)	49.1	28.3 (58)	14.3 (42.6)	6.5 (36.4)	19.6 (46.4)	23.4 (57.1)	6.1 (36.6)
Large (>30%)	30.1	7.2 (15)	15.4 (46.1)	7.5 (41.5)	8.2 (19.3)	12.1 (29.7)	9.8 (59.1)

Note: *one missing response.

In contrast, medium-income households mainly had the largest amount of land allocated to CF expressed in percentage of the total land (46.1%). Regarding the second category of typology (land allocated to CF), households with small CF land and medium CF land mostly allocated a medium amount of total land to CF (SLA=46.4%, MLA=57.1%). Households with large land allocated a high amount of total land to CF (59.1%).

[99] The percentage of land allocated to CF crops should not be mistaken with the size of the land allocated to CF in acres (the latter is one of two typology categories).

Box 9.1 shows that cultivating paprika requires substantial work during the preparation phase (6 months), managing the field with transplantation and application of fertilisers and chemicals (5 months) and harvesting and drying paprika (6 months). Thus, the available labour force represents an important requirement for contract farming.[100]

BOX 9.1 Calendar of farming and marketing practices in paprika production in Central Malawi

Activity	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Nursery establishment and management									■	■	■	■
Seed sowing and management									■	■	■	■
Land preparation	■	■										■
Transplanting and applying fertilisers and chemicals	■	■										■
Field management	■	■	■	■	■							
Harvesting* and drying			■	■	■	■	■	■				
Storage and marketing				■	■	■	■	■	■	■	■	■

Source: Author, focus group interviews in Malawi in 2014 and 2015.

Note: * Small-scale farmers harvested paprika several times throughout one season.

Table 9.10 indicates that, in most cases, household head and wife/husband (74.8%) were involved in paprika cultivation and less often, all household members participated (17.5%). Medium-income households (79%) and households with large CF land (80.3%) relied on the household head and wife/husband to the greatest extent compared to other household types. Over one-third of surveyed households (38.6%) reported hiring extra labour for CF activities. High-income households (61%) and households with large CF land (57.8%) had the highest proportion of

[100] Note that some activities overlap. An average time for paprika cultivation and harvesting is 7-9 months in the studied area.

hiring extra labour across groups. Low-income households (25%) and households with small CF land (27.6%) had the lowest percentage of extra labour hired.

Table 9.10 Households' use of labour for cultivating contracted paprika

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Involvement in cultivating paprika (multiple choice)**:**							
Household head	10.7	3.3 (6.7)	6.1 (18.2)	1.4 (7.8)	4.7 (11)	5.1 (12.6)	0.9 (5.6)
Household head and wife/husband	74.8	36.4 (75)	26.4 (79)	11.9 (66.2)	31.5 (74.6)	29.7 (72.6)	13.3 (80.3)
Males in the household	10.5	2.3 (4.8)	6.3 (18.9)	1.9 (10.4)	4.2 (9.9)	4.9 (12)	1.4 (8.4)
Females in the household	7.2	1.4 (2.9)	5.1 (15.4)	0.7 (3.9)	3.3 (7.7)	3 (7.4)	0.9 (5.6)
All household members	17.5	7 (14.4)	8.2 (24.5)	2.3 (13)	7.7 (18.2)	7.9 (19.4)	1.9 (11.3)
Hiring extra labour for cultivating paprika*							
Yes	38.6	12.1 (25)	15.4 (46.1)	11 (61)	11.7 (27.6)	17.1 (41.7)	9.6 (57.8)
No	60.5	35.5 (73)	18 (53.8)	7 (39)	30.4 (71.8)	23.1 (56.6)	7 (42.2)

Note: *four missing responses.

The decision on which crop to cultivate on the land was done mostly by agreement between the household head and wife/husband (57.2%) and to a smaller, yet considerable extent, exclusively by the household head (40.9%) (Table 9.11). This information is relevant as the decision about crops to be grown influences the distribution of activities for household members. The literature stated that males are more prone to allocate the land to cash crops while females are more concerned with food crops that will feed the family (see chapter 5 under *Imbalanced Relations in Households and Rural Communities*).

Table 9.11 Households' decision-making on cultivation

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Decision making on crop cultivation (multiple choice):							
Landlord	9.1	2.3 (4.8)	5.8 (17.5)	0.9 (5.2)	3.3 (7.7)	4.4 (10.8)	1.4 (8.4)
Household head	40.9	17.5 (36)	16.6 (49.6)	6.8 (37.7)	16.4 (38.7)	16.4 (40)	7.9 (47.9)
Household head and wife/husband	57.2	27.1 (55.8)	20.6 (61.5)	9.6 (53.2)	25.9 (6.1)	23.6 (57.7)	7.7 (46.5)
Contractor	1.4	1.2 (2.4)	0.2 (0.7)	0 (0)	0.7 (1.6)	0.2 (0.57)	0.5 (2.8)
All household members	6.5	1.9 (3.8)	4 (11.9)	0.7 (3.9)	3 (7.2)	2.6 (6.3)	0.9 (5.6)
Household head and landlord/contractor	0.7	0 (0)	0.5 (1.4)	0.2 (1.3)	0.2 (0.5)	0.5 (1.1)	0 (0)

Motivated by this assumption, further analysis was done to see whether male household heads would allocate a higher percentage of the entire land to CF crops compared to female household heads (Table 9.12). The results show that both males and females allocated mainly a medium percentage of their entire land to CF crop (50.8% of males and 42.6% of females allocated a medium size of their land to CF; calculated from Table 9.12). In the Nkhotakota district, male-headed households (36%) allocated a high percentage of the entire land for contracting to a greater extent compared to female-headed households (33%) (calculated from Table 9.12). Female-headed households (42%) in Lilongwe district allocated a high percentage of the entire land for CF crop to a considerably greater extent than male-headed households (25%) (calculated from table 9.12). Thus, for Malawi's paprika supply chain, the assumption that male-headed households will allocate more land to contracted crop was not confirmed.[101]

[101] Note that this claim is only confirmed in the case of a cash crop (contracted paprika) as the study did not take into consideration the ratio between the land allocated to food crops and cash crops.

Table 9.12 Allocation of CF land by gender of household head

Variable	Nkhotakota district** Males=86, Females=39			Lilongwe district** Males=252, Females=50			Total*** Males=338, Females=89		
	Low (<10 %)	Med (10-30%)	High (30-50% and >)	Low (<10%)	Med (10-30%)	High (30-50% and >)	Low %	Med %	High %
Male head*	20 (16)	35 (28)	31 (24.8)	51 (16.8)	137 (45.2)	63 (20.8)	71 (16.6)	172 (40.3)	94 (22)
Female head	11 (8.8)	15 (12)	13 (10.4)	6 (2)	23 (7.6)	21 (6.9)	17 (4)	38 (8.9)	34 (8)

Note: *one missing response, **numbers in brackets represent % of the total N in Nkhotakota/Lilongwe, ***numbers in brackets represent % of the total N.

The most used inputs for paprika cultivation were seeds (95.1%), fertilisers (90.7%) and pesticides (74.1%), while fungicides were used only by 28.3% of households (Table 9.13). Overall, high-income households used stated inputs to the greatest extent (fertilisers=93.5%, pesticides=83.1%, fungicides=41.5%) compared to other household types. Low-income households and households with small land allocated to CF showed the lowest use of pesticides and fungicides across the categories (LMI: pesticides=68.3%, fungicides=21.7%, SLA: pesticides=69.61%, fungicides=28.17%).[102]

Households mainly secured their inputs from the input dealer (68.9%) or contractor (24.1%). Medium-income households (32.9%) and households with large CF land (39.43%) were buying inputs from the contractor to the greatest extent compared to all other household types.

[102] In the household questionnaire, 95.1% of households reported using seeds. All households are expected to use the seeds sold by Company D but the 4.9% difference might be due to technical error or it represents the proportion of small-scale farmers that used the seeds from another provider. Seed, as the input, is not further discussed in the tables as the emphasis was on the use of inputs other than the ones provided through Company D. Furthermore, the usage of stated inputs should not be mistaken with the amount of stated inputs used. The results reported here refer only to the amount of households that generally used fertilisers, pesticides or fungicides and not to the amount of fertilisers, pesticides or fungicides that have been applied during paprika cultivation.

Table 9.13 Inputs required for contract farming production

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Inputs used in paprika production (multiple choice)***:***							
Seed	95.1	45.1 (92.8)	32.7 (97.9)	17.3 (96.1)	40.2 (95)	39 (95.42)	15.7 (94.36)
Fertilisers	90.7	44.4 (91.3)	29.4 (88.1)	16.8 (93.5)	37.6 (88.95)	37.6 (92)	15.4 (92.95)
Pesticides	74.1	33.2 (68.3)	25.9 (77.6)	15 (83.1)	29.4 (69.61)	32 (78.8)	12.4 (74.64)
Fungicides	28.3	10 (21.7)	10.7 (32.2)	7.5 (41.6)	11.9 (28.17)	10.3 (25.14)	6.1 (36.62)
None	0.2	0 (0)	0.2 (0.7)	0 (0)	0 (0)	0.2 (0.57)	0 (0)
Source of inputs for paprika production (multiple choice)***:***							
Contractor	24.1	7.7 (15.9)	11 (32.9)	5.4 (29.9)	7 (16.57)	10.5 (25.71)	6.5 (39.43)
Local market	61	27.1 (55.8)	22 (65.7)	11.9 (66.2)	27.1 (64)	23.1 (56.57)	10.7 (64.78)
Input dealer	68.9	33.6 (69.2)	24.3 (72.7)	11 (61)	27.6 (65.19)	28.5 (69.71)	12.9 (77.46)
Colleagues	11.9	2.3 (4.8)	7.5 (22.4)	2.1 (11.7)	6.3 (14.91)	4.2 (10.28)	1.4 (8.45)
NGO	1.9	1.2 (2.4)	0.2 (0.7)	0.5 (2.6)	1.6 (3.86)	0.2 (0.57)	0 (0)
Association/coop/ club	7.2	2.6 (5.3)	4 (11.9)	0.7 (3.9)	84.7 (11.05)	2.1 (5.14)	0.2 (1.40)
Seed cost/season*:							
Low (<450 MKW)	11.9	5.6 (11.5)	4.2 (12.6)	2.1 (11.7)	6.1 (14.36)	4 (9.71)	1.9 (11.26)
Medium (450-850 MKW)	23.4	11.2 (23.1)	7 (21)	5.1 (28.6)	10.7 (25.41)	8.4 (20.57)	4.2 (25.35)
High (>850 MKW)	63.6	31.5 (64.9)	21.3 (63.6)	10.7 (59.7)	25 (59.11)	28 (68.57)	10.3 (61.97)
Fertiliser cost/season:							
Low (<12,000 MKW)	28.5	14.7 (30.3)	9.1 (27.3)	4.7 (26)	15 (35.36)	8.6 (21.15)	4.9 (29.58)
Medium (12,000-16,000 MKW)	15.7	6.8 (13.9)	5.1 (15.4)	3.7 (20.8)	7 (16.57)	5.6 (13.7)	3 (18.31)
High (>16,000 MKW)	46.3	21.7 (44.7)	15.9 (47.5)	8.6 (48)	15.2 (35.91)	23.4 (57.15)	7.7 (46.47)
Unknown/not using it	9.5	5.4 (11.1)	3.3 (9.8)	0.9 (5.2)	5.1 (12.16)	3.3 (8)	0.9 (5.64)

Note: * five missing responses.

Table 9.13 Inputs required for contract farming production - *Continued*

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Pesticide cost/season:							
Low (<3,500 MKW)	42.5	22.2 (45.67)	13.3 (39.86)	7 (38.96)	16.4 (38.68)	17.8 (43.43)	8.2 (49.30)
Medium (3,500-6,500 MKW)	25.5	9.1 (18.75)	10.7 (32.17)	5.6 (31.14)	9.8 (23.20)	11.4 (28)	4.2 (25.35)
High (>6,500 MKW)	10.5	3.5 (7.21)	3.5 (10.49)	3.5 (19.5)	3.59 (8.29)	4.4 (10.86)	2.6 (15.49)
Unknown/not using	21.5	13.8 (28.37)	5.8 (17.48)	1.9 (10.4)	12.6 (29.83)	7.2 (17.71)	1.6 (9.86)
Fungicide cost/season:							
Low (<3,500 MKW)	35	15.9 (32.69)	12.6 (37.76)	6.5 (36.3)	12.1 (28.73)	14.5 (35.43)	8.2 (49.30)
Medium (3,500-6,500 MKW)	21.3	5.1 (10.58)	10 (30.07)	6.1 (33.8)	7.2 (17.13)	10.3 (25.14)	3.7 (22.54)
High (>6,500 MKW)	7.3	2.1 (4.33)	2.6 (7.69)	2.6 (14.3)	3.3 (7.74)	2.3 (5.72)	1.6 (9.85)
Unknown/not using it	36.4	25.5 (52.40)	8.2 (24.48)	2.8 (15.6)	19.6 (46.4)	13.8 (33.71)	3 (18.31)
Means of paying for inputs (multiple choice)***:***							
In cash	96.7	47.7 (98.1)	31.8 (95.10)	17.3 (96.1)	40.9 (96.69)	39.5 (96.57)	16.1 (97.18)
On credit	10.7	3.3 (6.73)	4.4 (13.29)	3 (16.9)	2.3 (5.52)	14.2 (10.29)	4.2 (25.35)
Subsidies for inputs	6.8	0.7 (1.44)	5.8 (17.48)	0.2 (1.3)	3 (7.18)	2.8 (6.86)	0.9 (5.63)
Deductions from contract payment	0.9	0 (0)	0.2 (0.7)	0.7 (3.9)	0.5 (1.10)	0.5 (1.14)	0 (0)

Regarding cost of inputs, low-income households (64.9%) and households with medium CF land (68.57%) had the highest percentage of high seed costs. The highest amounts of high fertiliser costs were reported within the medium- (47.5%) and high-income households (48%) and households with medium CF land (57.15%). Low-income households (45.67%) and households with large CF land (49.30%) had the greatest percentage of low pesticide costs across groups. Finally, medium-income

households (37.76%) and households with large CF land (49.30%) had the highest percentage of low fungicide costs. For all households, the inputs were most often bought in cash (96.7%) or credit (10.7%). The subsidies for inputs, when received, were distributed relatively equally among households with small (7.18%), medium (6.86%) and large CF land (5.63%). Nevertheless, medium-income households (17.48%) had a considerably higher percentage of received subsidies for inputs compared to low- (1.44%) and high-income households (1.3%).

Small-scale farmers in Central Malawi were obtaining high (39.7%) to medium yields (33.6%) (Table 9.14). Within household types, the yield levels followed a pattern. Low-income households (36.1%) and households with small CF land (38.67%) had the highest percentage of low yields. Medium-income households (37.06%) and households with medium CF land (36.57%) had medium yields to the greatest extent. Finally, high-income households (55.84%) and households with large CF land (63.38%) recorded the most cases with high yields compared to other types. Nevertheless, the information on obtained yields was triangulated from two different sources (small-scale farmers and Company D's representatives) and using two different instruments (household questionnaire and focus group interviews).[103]

Table 9.14 Farm-related characteristics of contracting arrangement

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Dry paprika yields/season**							
Low (<100 kg/season)	25.7	17.5 (36.1)	4.4 (13.28)	3.7 (20.77)	16.4 (38.67)	7.9 (19.42)	1.4 (8.45)
Medium (100-200 kg/season)	33.6	17.3 (35.57)	12.4 (37.06)	4 (22.07)	14 (33.14)	15 (36.57)	4.7 (28.17)
High (>200 kg/season)	39.7	13.1 (26.92)	16.6 (49.65)	10 (55.84)	11.4 (27.07)	17.5 (42.86)	10.5 (63.38)

Note: ** one/four missing responses.

[103] Note that Table 9.14 reports yields for dry paprika per season. Although small-scale farmers did not record the weight of the fresh paprika, according to Company D's extension officer, it was possible to reach 2 to 4 tonnes of fresh paprika per acre with appropriate management and inputs. The conversion rate of fresh paprika into dry paprika is around 20-30%.

Taking all of what has been stated above into consideration, it was assessed that an average volume of paprika delivered to Company D was 20-50 kg/farmer per season.

Box 9.2 outlines the timing and type of extension services provided to small-scale farmers under the contract. Company D's team of extension workers, according to their operating area, usually delivered the services.

BOX 9.2 Extensions services provided by Company D

Company D's extension services provided to small-scale farmers under the contract were divided into four parts:

No.	Timing	Main activity
Part 1	October	Training on the appropriate establishment and management of the nursery.
Part 2	November (or close to the rainy season)	Training on transplanting.
Part 3	February/March	Training on the field management.
Part 4	April	Training on harvesting and post-harvest management.

Source: Semi-structured interview with two extension field officers from Company D, Malawi, 2015.

The biggest proportion of small-scale farmers under the contract did not have access to storage or transport services provided by Company D (Table 9.15). The majority of households stored (94.2%) and transported paprika themselves (73.4%). When the contractor provided transport services, this was recorded to the greatest extent within high-income households (28.57%) and households with large CF land (32.4%) compared to other household types. Over half of the respondents (57.5%) transported their paprika using a bicycle and less often by carrying the crop on their head (28%). High-income households (25.97%) and households with large CF (29.58%) used a truck for transporting purposes to the greatest extent compared to other household types. In addition, 43.9% of households were located close to the collection point.

Table 9.15 Storage, transport and distance to the collection point

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Storage provider for paprika (multiple choice)***:***							
Household itself stores paprika	94.2	46.5 (95.67)	31.3 (93.7)	16.4 (90.90)	39 (92.26)	39 (95.42)	15.9 (95.77)
Contractor	1.9	0.7 (1.44)	0.7 (2.10)	0.5 (2.58)	0.9 (2.21)	0.5 (1.14)	0.5 (2.82)
Colleagues	0.7	0.2 (0.48)	0.2 (0.70)	0.2 (1.30)	0.5 (1.10)	0 (0)	0.2 (1.41)
Assoc/coop/club	3.2	1.2 (2.40)	1.2 (3.50)	0.9 (5.20)	1.9 (4.42)	1.4 (3.43)	0 (0)
Vendor	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Transporter	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Transport provider for paprika (multiple choice)***:***							
Household itself transports paprika	73.4	38.6 (79.33)	23.8 (71.33)	11 (61.03)	35.5 (83.98)	28.3 (69.14)	9.3 (56.34)
Contractor	14.3	4.4 (9.13)	4.7 (13.99)	5.1 (28.57)	4.7 (11.1)	4.2 (10.29)	5.4 (32.4)
Colleagues	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Assoc/coop/club	1.2	0.2 (0.48)	0.7 (2.1)	0.2 (1.30)	0.2 (0.55)	0.9 (2.29)	0 (0)
Vendor	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Transporter	12.6	5.8 (12)	4.7 (13.99)	2.1 (11.69)	2.8 (6.63)	7.9 (19.43)	1.9 (11.27)
Means of transporting paprika*:*							
Truck	11.4	2.6 (5.29)	4.2 (12.59)	4.7 (25.97)	3 (7.18)	3.5 (8.57)	4.9 (29.58)
Car	2.6	1.6 (3.37)	0 (0)	0.9 (5.19)	1.2 (2.76)	0.7 (1.71)	0.7 (4.22)
Motorbike	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Bicycle	57.5	31.3 (64.42)	19.2 (57.34)	7 (38.96)	23.4 (55.25)	27.6 (67.43)	6.3 (38.03)
Carrying on the head	28	13.3 (26.92)	9.8 (29.37)	5.1 (28.57)	14.7 (34.81)	9.1 (22.29)	4.2 (25.35)
Distance from household to collection point:							
Close (<15 min of walk)	43.9	23.1 (47.60)	14.7 (44.05)	6.1 (33.77)	18.2 (43.1)	18.9 (46.28)	6.8 (40.84)
Medium (15-30 min of walk)	21.1	9.1 (18.75)	6.1 (18.20)	5.8 (32.46)	7.2 (17.12)	7.5 (18.29)	6.1 (36.62)
Large (>30 min of walk)	35	16.4 (33.65)	12.6 (37.75)	6.1 (33.77)	16.8 (39.78)	14.5 (35.43)	3.7 (22.54)

**Note*: two missing responses.

Table 9.16 indicates that the majority of households (75%) were capable of delivering the contracted crop on time; however, households in Nkhotakota had a considerably lower percentage score for delivering the crop on time (59.2%) compared to the Lilongwe district (81.5%). The compliance with contract terms regarding agreed quality and quantity proved to be challenging for the surveyed households in both districts. Only 58% of all households succeeded in delivering the agreed quality and an even lesser percentage of households (52%) delivered the agreed quantity. Once more, households in the Lilongwe district had higher levels of compliance with the contract terms in delivering the agreed quality (NKH=48%, LLW=62%) and agreed quantity (NKH=40%, LLW=57%).[104]

Table 9.16 Household capability to comply with contracting terms

Variable	Yes, always (%)			Yes, mostly (%)			No (%)		
	Both	NKH	LLW	Both	NKH	LLW	Both	NKH	LLW
Delivery of crop on time	75	59.2	81.5	10.3	17.6	7.3	14.7	23.2	11.2
Delivery of agreed quality*	58	48	62	14	2.2	16.2	27	40.8	21.8
Delivery of agreed quantity	52	40	57	17	11.2	19.5	31	48.8	23.4

Note: * four missing responses.

For over half of surveyed households (53.7%), there was no observed change in the size of plots for either food crops or cash crops since the household entered a contract farming arrangement (Table 9.17). However, a considerable percentage of households (42.3%) stated that the plot size increased, and this was found to be true to the greatest extent within high-income households (57.14%) and households with large CF land (47.89%) compared to other types.

[104] In the context of Malawi's paprika supply chain, the 'agreed quantity' refers to all paprika produced using the seed bought from Company D. Therefore, failure to deliver the agreed quantity was considered whenever the household did not deliver its entire production to the contractor.

Table 9.17 Changes of the plot size for contracted small-scale farmers

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Changed plot size since entering CF**[Δ]							
Plot size increased	42.3	15.4 (31.73)	16.6 (49.65)	10.3 (57.14)	16.6 (39.23)	17.8 (43.42)	7.9 (47.89)
Plot size decreased	3.7	2.1 (4.33)	1.6 (4.89)	0 (0)	1.9 (4.42)	1.2 (2.86)	0.7 (4.22)
No change	53.7	30.8 (63.46)	15.2 (45.45)	7.7 (42.86)	53.7 (56.35)	21.7 (53.14)	7.9 (47.89)

Note: *one missing response. [Δ]The original phrasing in the questionnaire: '*Since you started producing crop under the contract, have you changed the plot size of other crops (food crops or other cash crops)?*' (see Appendix 2).

9.3.2 Influence of Contract Farming on Income Generation

Table 9.18 indicated that the majority of surveyed households had low monthly income (48.6%), while only 18% of households had high income. In the Nkhotakota district, households were relatively equally distributed across low and medium household types, with lesser frequencies in high-income households. The Lilongwe district had more differences among household types, with a majority of farmers in the low-income category (53.8%) and a lower percentage of households in the high-income category compared to the Nkhotakota district (NKH=18%, LLW=13.5%).

Table 9.18 Income levels of contracted small-scale farmers

Variable	Both districts *(% of total N)*	Nkhotakota *(% of total in NKH)*	Lilongwe *(% of total in LLW)*
Household income			
• Low monthly income	208 (48.6)	45 (36)	163 (53.8)
• Medium monthly income	143 (33.4)	44 (35.2)	99 (32.7)
• High monthly income	77 (18)	36 (28.8)	41 (13.5)

Note: * one respondent answered 'Do not know', which is not included in this table.

Contract farming (92.5%), trade (47.9%) and part-time work (34.3%) were regular sources of income for contracted small-scale farmers (Table 9.19). Contract farming was a regular source of income to the greatest extent for medium-income households (94.4%) and households with large land allocated to CF (94%). Households with high income reported contract farming as their regular source of income to the least extent across the categories (88.3%). Also, high-income households (55.8%) and households with large land allocated to CF (57.7%) had the highest percentage of trade as a regular source of income. Households with small CF land (40.3%) showed the highest percentage of part-time work as a regular source of income among the household types.

Table 9.19 Regular source of income for contracted small-scale farmers

Variable	**Both districts Nkhotakota and Lilongwe (N=428)**						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Regular source of income for the household (multiple choice):							
Contract farming	92.5	45.1 (92.7)	31.5 (94.4)	15.9 (88.3)	38.8 (91.7)	37.9 (92.6)	15.7 (94)
Wages: regular work	6	0.2 (0.5)	0.7 (2.1)	0.5 (2.6)	0.9 (2.2)	0 (0)	0.5 (2.81)
Wages: part-time work	34.3	17.1 (35)	11.9 (35.6)	5.4 (30)	17.1 (40.3)	11 (28.8)	6.3 (38)
Trade	47.9	21.7 (44.7)	16.1 (48.2)	10 (55.8)	19.9 (47)	18.5 (45.1)	9.6 (57.7)
Grant and remittances	9.6	0.5 (1)	5.6 (16.8)	3.5 (19.5)	3.7 (8.84)	1.6 (4)	4.2 (25.3)
Investments and savings	4.7	0.5 (1)	4.2 (12.6)	0 (0)	2.1 (5)	2.1 (5.14)	0.5 (2.8)

When asked about the importance of different income sources for their households, 94.9% of small-scale farmers ranked contract farming as the most important one (Table 9.20). Trade (76.5%), and investments and savings (73.1%) were ranked as the second and third most important household income sources.[105]

For the majority of households, the wages from part-time work were the least important source of income (25.3%). Regular work wages were more important to small-scale farmers in the Lilongwe district (28.7%) compared to the Nkhotakota district (16.8%). This might be due to the closeness of the capital city and opportunities for regular work that arise on a daily basis. Also, grants and remittances were more important in the Nkhotakota district (43.2%) compared to the Lilongwe district (37.3%), while investments and savings were more important in the Lilongwe district (75%) than in the Nkhotakota district (68.8%).

Table 9.20 Ranking the importance of income sources for the household

Variable	Not important, %			Neutral, %			Important, %		
	Both	NKH	LLW	Both	NKH	LLW	Both	NKH	LLW
Contract farming	2.1	4.8	1	3	3.2	3	94.9	92	96
Wages: regular work	70.6	78.4	67.3	3.7	4.8	3.3	25.3	16.8	28.7
Wages: part-time work	37.9	41.6	36.3	17.1	18.4	16.5	44.6	40	46.5
Trade	17.5	20.8	16.2	5.6	5.6	5.6	76.5	72.8	77.9
Grants and remittances	41.1	40	41.6	19.6	16.8	20.8	39.1	43.2	37.3
Investments and savings	21.7	26.4	19.8	4.7	4.8	4.6	73.1	68.8	75

The majority of surveyed households received information on the price for paprika mainly from extension workers (78%) and less often from colleagues (35.5%) and the contractor (30.1%) (Table 9.21). Households with large CF land (42.25%) and medium-income households (38.46%) had the highest percentage of acquiring information on the price from Company D. Farmers received information on the price mostly after the harvest (63.3%). The greatest extent of households receiving the price before the harvest was found among medium-income households (37.06%) and households with small CF land (35.36%). Table 1.1A in Appendix B indicates that a higher proportion of households in the Lilongwe district were informed about

[105] In the context of this study, the term 'trade' means selling food surpluses on the green market, trading with manufactured goods (i.e. wooden souvenirs or furniture) or through small shops and re-selling items (e.g. clothes or house necessities).

the price for paprika before the harvest compared to the Nkhotakota district (NKH=27%, LLW=34%).

Table 9.21 Information on price for contracted small-scale farmers

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Source of information on paprika price (multiple choice)***:***							
Contractor	30.1	11.4 (23.56)	12.9 (38.46)	5.8 (32.47)	9.1 (21.55)	14 (34.28)	7 (42.25)
Colleagues	35.5	12.1 (25)	15.9 (47.55)	7.5 (41.56)	16.6 (39.23)	12.1 (29.71)	6.5 (39.44)
Radio/TV	6.1	1.6 (3.36)	3.5 (10.49)	0.9 (5.19)	3.7 (8.84)	0.9 (2.28)	1.4 (8.45)
Extension worker	78	36.9 (75.96)	26.9 (80.42)	14.3 (79.22)	34.8 (82.32)	126 (29.4)	13.6 (81.69)
Association/coop/club	2.3	1.6 (3.36)	0.5 (1.40)	0.2 (1.30)	0.5 (1.10)	0.7 (1.71)	1.2 (7.04)
Local market	16.8	4.9 (10.10)	10 (30.06)	1.9 (10.39)	9.6 (22.65)	5.1 (12.57)	2.1 (12.68)
Digital extension (text messages)	0.2	0.2 (0.48)	0 (0)	0 (0)	0.2 (0.55)	0 (0)	0 (0)
Other	0.2	0 (0)	0 (0)	0.2 (1.30)	0 (0)	10.2 (0.57)	0 (0)
Household knows the information on paprika price:							
Before the harvest	32.3	15.2 (31.25)	12.4 (37.06)	4.7 (25.98)	15 (35.36)	12.9 (31.43)	4.4 (26.76)
After the harvest	63.3	32 (65.87)	19.4 (58.04)	11.9 (66.23)	25.5 (60.22)	25.7 (62.86)	11.9 (71.83)
Before or after delivery	4.4	1.4 (2.88)	1.6 (4.90)	1.4 (7.79)	1.9 (4.42)	2.3 (5.71)	0.2 (1.41)

One of the most important questions in the household survey was whether the income gained from contract farming suffices for household needs throughout the year. Table 9.22 indicates that the income from CF was sufficient for only 5.4% of households and partially sufficient for 57.2% of the contracted households. The income from contracting activity was not sufficient for 37.4% of households. The income from CF was sufficient throughout the year for high-income households (6.49%) and households with large land allocated to CF (7.04%) to the greatest extent compared to other household types. In contrast, low-income households

(47.6%) and households with small land allocated to CF (40.88%) stated that CF income was not sufficient for their needs in the highest proportions across the groups.

Table 9.22 Influence of contract farming on household income generation

Variable		Both districts Nkhotakota and Lilongwe (N=428)					
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Sufficiency of CF income:							
Sufficient for the whole year	5.4	2.1 (4.3)	2.1 (6.29)	1.2 (6.49)	2.6 (6.07)	1.6 (4)	1.2 (7.04)
Sufficient only partially	57.2	23.4 (48.1)	22 (65.74)	11.9 (66.23)	22.4 (53.04)	22.9 (56)	11.7 (70.42)
Not sufficient	37.4	23.1 (47.6)	9.3 (27.97)	4.9 (27.27)	17.3 (40.88)	16.4 (40)	3.7 (22.54)
Strategies to compensate the lack of income*:							
Income from regular work	1.4	0.2 (0.48)	0.2 (0.70)	0.9 (5.19)	0.2 (0.55)	0.7 (1.71)	0.5 (2.82)
Occasional work	55.8	29 (59.61)	18 (53.85)	0.9 (49.35)	25.7 (60.77)	18.9 (46.29)	11 (66.2)
Off-farm activities	27.3	10.7 (22.11)	11.4 (34.26)	5.1 (28.57)	11.9 (28.18)	11.7 (28.57)	3.7 (22.53)
Selling surpluses of food crops	71.3	37.4 (76.92)	23.6 (70.63)	10.3 (57.14)	27.3 (64.64)	31.5 (77.14)	12.1 (73.24)
Borrowing money	17.3	3.3 (6.73)	9.9 (26.57)	5.1 (28.57)	6.5 (15.45)	7 (17.14)	3.7 (22.53)
None or N/A	4.4	1.9 (3.85)	1.86 (5.59)	0.7 (3.87)	2.3 (5.52)	1.4 (3.43)	0.7 (4.22)

Note: * Multiple-choice response.

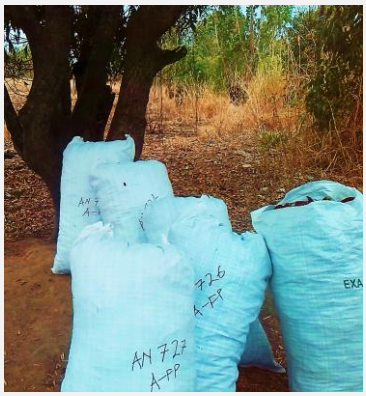
The majority of small-scale farmers sold surpluses of food crops (71.3%) and engaged in occasional work (55.8%) to compensate for the lack of income. Of all the strategies, regular work was least represented, which suggests that surveyed small-sale farmers did not intensively engage in regular work. High-income households (5.19%) showed the highest percentage of using the income from regular work to compensate for the lack of income. Low-income households showed the lowest

proportions of borrowing money as a compensation strategy (6.73%) among households.[106]

Regarding differences between two districts, households in Nkhotakota considered CF income as not sufficient to a slightly greater extent compared to Lilongwe (NKH=39%, LLW=36%) (based on Table 1.1A in Appendix B.).

The process of marketing paprika itself is depicted in Box 9.3.

BOX 9.3 Marketing of paprika



1. Small-scale farmers deliver paprika to an agreed collection point in sacks weighing approximately 20 kg.

2. Paprika is unloaded for grading purposes. Company D's staff members usually do the grading.

3. Company D's staff members then weighted paprika and the price is paid to small-scale farmers on the spot or within two weeks.

Source: Author's observation in Malawi, 2014.

One of the exercises during the focus group interviews was the calculation of production costs and profits from contract farming to gain a better insight into the amount invested and returned. Table 9.23 represents a summary from eight focus group interviews. The quantities of used inputs, costs and final profits were compared across focus group interviews and brought to the table to represent an average case in Malawi's paprika supply chain.

[106] Note that there is no intention to establish the causal relationship to claim that households engaged in other activities because the income from contract farming was not sufficient for their yearly needs. The information from Table 9.22 is used to establish whether the income from CF was sufficient and which other activities were practiced in order to compensate the lack of income.

Table 9.23 Analysis of estimated production costs and potential profits from CF

Category	Volume/activity per acre	Cost, MKW	Comments
Machinery			
Spray	1	30,000	Bought in cash
Hoe	2	3,000	Bought in cash
Water cane	2	5,000	Bought in cash
Land			
Nursery	1	8,000	Rent per season, in cash
Land	1	8,000	Rent per season, in cash
Seeds	1 kg	1,000	Bought from Company D in cash
Fertilizers			
D-compound	100 kg	32,000	Bought in cash
CAN	100 kg	30,000	Bought in cash
NPK	100 kg	32,000	Bought in cash
Chemicals			
Diphenyl	0.5 kg	1,500	Bought in cash
Copper	0.5 kg	1,500	Bought in cash
Labour			
Ridging	/	8,000	Uncertain number of individuals
Weeding	/	6,000	Uncertain number of individuals
Land hallowing	/	8,000	Uncertain number of individuals
Harvesting	/	10,000	Uncertain number of individuals
Transport			
Ox-cart	1-2	8,000	Renting
A) Total production costs		**192,000**	
a) Yield of dry paprika per acre	800-1,000 kg		
b) Price per 1 kg:			
Grade A	550 MKW		
Grade B	450 MKW		
B) Revenue (a*b)			
Price at 550 MKW		**440,000-550,000**	
Price at 450 MKW		**360,000-450,000**	
C) Profit (A-B)			
Price at 550 MKW		**248,000-358,000**	
Price at 450 MKW		**168,000-258,000**	

Note: A) Total production costs = US$ 409. It should be noted that this price was an average captured during the research. Throughout the marketing season, the price for grade A went up to MKW 650. This table, however, provides an average case. a) Yield of dry paprika = stated yield represents the amount of dried paprika that is more likely to be achieved by farmers that are better off in the category of small-scale farmers. It suggests that an approximate yield of fresh paprika was 4 tons/acre. Grade A = US$ 1.2; grade B = US$ 0.95; revenue for price at 550 MKW = US$ 937-1,170; revenue for price at 450 MKW = US$ 766-958; profit for price at 550 MKW = US$ 528-762; profit for price at 450 MKW = US$ 358-549 (OANDA, 2016 for all the currency values).

The calculation was based on 1 acre. Table 9.23 shows that small-scale farmers bought the majority of the inputs in cash and the most expensive ones were fertilisers. Estimated production costs for 1 acre were US$ 409 and the price offered by the contractor varied depending on the grade: grade A=1.2 US$/kg, grade B=0.95 US$/kg. Reported yield per acre was between 800 and 1,000 kg. Expected revenues for grade A were US$ 937-1,170 and for grade B US$ 766-958. Potential profits from contracting ranged between US$ 528-762 for grade A and US$ 358-549 for grade B.

The following two cross-tabs indicate the distribution of income sufficiency according to the productivity and income levels. Table 9.24 shows that households who achieved medium yields had the highest proportion (7%) of sufficient CF income. The pattern for partially sufficient and not sufficient CF income was observed: the higher the yield obtained, the higher the ratio of partially sufficient CF income and lower the ratio of not sufficient CF income.

Table 9.24 CF income sufficiency according to yields and land allocated to CF

Sample	**Yield level** *Frequency (% within the type)*			**Land allocated to CF*** *Frequency (% within the type)*		
	Low	**Medium**	**High**	**Small**	**Medium**	**Large**
Both districts*						
CF income sufficient	3	10	9	11	7	4
	(2.7)	(7)	(5.5)	(6.1)	(4)	(6.1)
CF income partially sufficient	42	81	115	94	98	46
	(38.2)	(56.6)	(70.1)	(52.5)	(56)	(69.7)
CF income not sufficient	65	52	40	74	70	16
	(59.1)	(36.4)	(24.4)	(41.4)	(40)	(24.2)
Nkhotakota*						
CF income sufficient	2	4	7	8	2	3
	(7.1)	(10.5)	(12.1)	(14.2)	(3.6)	(23.1)
CF income partially sufficient	12	19	32	24	30	8
	(42.9)	(50)	(55.2)	(42.9)	(54.6)	(61.5)
CF income not sufficient	14	15	19	24	23	2
	(50)	(39.5)	(32.8)	(42.9)	(41.8)	(15.4)
Lilongwe						
CF income sufficient	1	6	3	3	5	2
	(1.2)	(5.7)	(2.7)	(2.4)	(4.1)	(3.5)
CF income partially sufficient	30	63	88	72	68	42
	(36.6)	(59.4)	(78.6)	(57.6)	(56.7)	(72.4)
CF income not sufficient	51	37	21	50	47	14
	(62.2)	(34.9)	(18.7)	(40)	(39.2)	(24.1)

Note: *11 responses 'Do not know' were not included in this Table, ** one missing response.

Households that allocated small and large land to contracted paprika had the same ratio of sufficient CF income (6.1%). Households with large land allocated to paprika had the highest proportion of partially sufficient CF income (69.7%) and the lowest proportion of insufficient CF income (24.2%) compared to households with small and medium land allocated to CF. In Nkhotakota, households with low yields had the highest percentage of not sufficient CF income (50%), while households with high yields reported that CF income was sufficient (12.1) to the greatest extent. Similarly, households that allocated small land to CF had the highest proportion of not sufficient CF income (42.9) and households with large land allocated to CF showed that their CF income was sufficient (23.1%) to the highest extent across all categories. In Lilongwe, households with low yields had the highest rate of not sufficient CF income (62.2%) across all categories. Households with medium yield achieved the highest proportions of sufficient CF income (5.7%) among all types. Households that allocated small land to CF reported the greatest proportion of not sufficient CF income (40%) and households with medium CF land generated sufficient CF income (4.1%) to the highest extent within this typology category.

Table 9.25 points that medium-income households generated sufficient income from contract farming to the greatest extent (6.4%) compared to low- (4.3%) and high-income households (5.5%). High-income households had the highest proportion of partially sufficient CF income (65.7%). Low-income households reported that the income from CF was not sufficient to the highest level (47.6%) in comparison with other categories (medium-income=28.6%, high-income=28.8%). In Nkhotakota and Lilongwe, low-income households had the highest proportion of not sufficient CF income (NKH=51.1%, LLW=46.4%) across the categories. Medium- (11.4%) and high-income households (11.1%) in Nkhotakota had a similar extent of small-scale farmers who reported that CF income was sufficient for their yearly needs. However, medium-income households (38.6%) had a higher percentage of not sufficient CF income compared to high-income households (25%). Medium-income households in Lilongwe reported the highest rate of sufficient CF income (4.1%) within the type.

Table 9.25 CF income sufficiency according to the income levels

Sample	Income level *Frequency (% within the type)*		
Both districts	**Low**	**Medium**	**High**
CF income sufficient	9 (4.3)	9 (6.4)	4 (5.5)
CF income partially sufficient	100 (48.1)	91 (65)	48 (65.7)
CF income not sufficient	99 (47.6)	40 (28.6)	21 (28.8)
Nkhotakota			
CF income sufficient	4 (8.9)	5 (11.4)	4 (11.1)
CF income partially sufficient	18 (40)	22 (50)	23 (63.9)
CF income not sufficient	23 (51.1)	17 (38.6)	9 (25)
Lilongwe			
CF income sufficient	5 (3.1)	4 (4.1)	1 (2.4)
CF income partially sufficient	82 (50.3)	72 (72.7)	28 (68.3)
CF income not sufficient	76 (46.6)	23 (23.2)	12 (29.3)

9.3.3 Influence of Contract Farming on Productivity and Income Generation – Results from the Focus Group Interviews

During the focus group interviews, small-scale farmers emphasised that contracting enables producing quality produce, which in turn generates higher prices for a farmer:

> *'Farmers on contract produced quality produce which carries higher prices than those doing individually. However, currently, production is low. For example, farmers produce 3000 kg at club level and on average each farmer may produce 300 kg per acre.*'
> Focus group interview no. 1, Kamparilo and Kalilani area, Nkhotakota district, 2014

However, the respondents also revealed a problem of low productivity, which prevented small-scale farmers from securing more benefits from contract farming. Challenges related to low productivity due to poor input provision are addressed in more detail in chapter 10.

With regard to income generation, small-scale farmers provided examples where contract farming resulted in receiving income, which was used to improve either household livelihood or farming practices. For instance, respondents stated that the income from contract farming activity served to buy a means of transport (bicycle and motorbike), an asset (radio) and additional production inputs (land and fertilisers):

'I bought a bicycle and a radio with the money realised from selling paprika.'

Focus group interview no. 5, Chawatha area, Lilongwe district, 2015

'*Another participant said initially he was growing tobacco and always ran a risk to bankrupt but averted to paprika which he grew on 20 ridges where he applied 20kg fertilizer and after selling paprika bought a second hand bicycle. Another farmer said he applied 15kg fertiliser to paprika and after selling the produce, he bought 2 bags of fertiliser (50kg NPK and 50kg Urea).*'

Assistant's notes from the focus group interview no. 3, Chawatha area, Lilongwe district, 2015

One participant said in 2012 he realised MKW 111,000 and in 2013 on 0.5 acre realised revenue of MKW 137,000 which he bought a motorbike at MKW 150, 000 and 6 bags of chemical fertiliser which he used for the next growing season. Another farmer said in 2010 he managed to secure 0.25 acre at MKW 43,000 with the money from selling paprika.

Assistant's notes from the focus group interview no. 4, Chiputu area, Lilongwe district, 2015

Another example of the influence of contract farming on small-scale farmers' livelihood concerned access to schooling:

'You can even see it as a matter of fact - our lives are getting better and better. This crop is helping us. We can now afford to send our kids to school which we would not do before.'

Focus group interview no. 8, Nkhoma area, Lilongwe district, 2015

Despite the positive influence on farmers' livelihood, small-scale farmers reported that the income from contract farming was not satisfying and the low contract price was indicated as the key challenge (see chapter 10).

9.3.4 Influence of Contract Farming on Food Security

Most of the surveyed households reported medium food expenses per month (41.4%) (Table 9.26). High-income households had the highest percentage of high food costs (51%) and low-income households had the highest levels of low food costs (51%) within the income level type. Households with small CF land had the highest level of high food costs (26.5%). Households with medium CF land had the highest percentage of low food costs (38%) and households with the large proportion of land allocated to CF crop had the highest percentage of medium costs regarding the food (60%). Households in the Nkhotakota district had a higher percentage of high costs for food (39%) compared to households in the Lilongwe district (15%) (based on Table 1.1A in Appendix B).

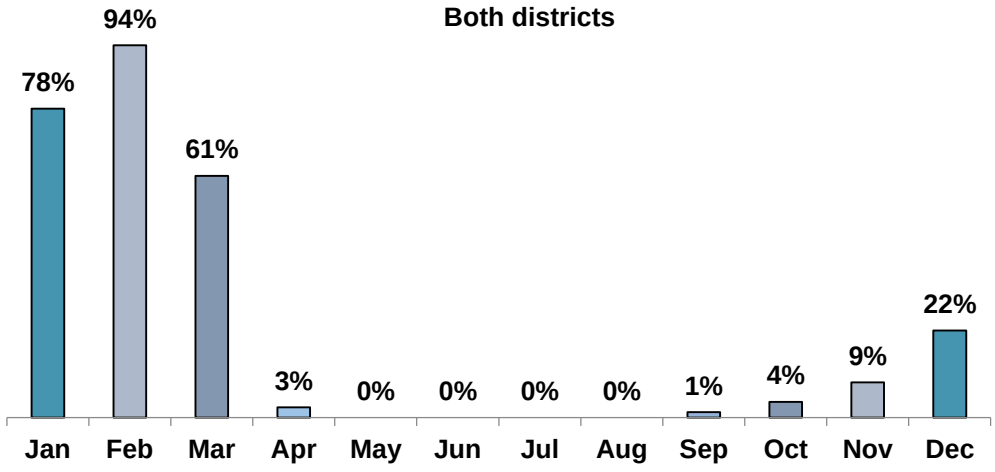
Table 9.26 Monthly food expenses for contracted small-scale farmers

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Food expenses/month*							
Low (>5 500 MKW)	35.5	24.9 (51)	8 (24)	2.8 (15)	16 (37)	15.7 (38)	3.8 (22)
Medium (5 500-13 500 MKW)	41.4	20 (41)	15.7 (47)	5.9 (32)	15.3 (36)	16.2 (39)	10.1 (60)
High (>13 500 MKW)	22.7	3.8 (8)	9.9 (29)	9.2 (51)	11.3 (26)	8.9 (22)	2.6 (15)

Note: * two missing responses.

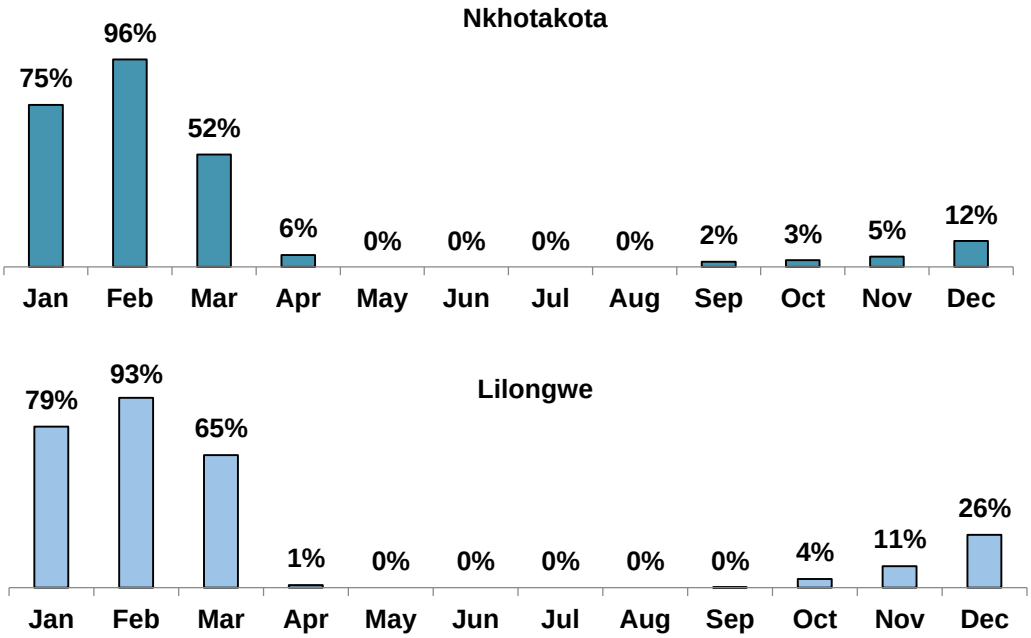
Figure 9.2 depicts food security in the two districts throughout the year. The three hungry months for the majority of surveyed households were January (78%), February (94%) and March (61%). All households reported they were food secure during the period from May to August. Small-scale farmers' inability to secure food for their household needs emerged again in September (1%), October (4%), November (9%) and December (22%).

Figure 9.2 Food security for surveyed households in both districts



Note: Figure 9.2 shows percentage of households having problems to secure enough food.

Figure 9.3 Food security for surveyed households in Nkhotakota and Lilongwe



Households in Nkhotakota showed a higher proportion of food insecurity (6%) than households in Lilongwe (1%) in April (Figure 9.3). Households in Lilongwe had higher levels of food insecurity during March (65%), November (11%) and December (26%) compared to Nkhotakota (March=52%, November=5%, December=12%).

Table 9.27 Consumption of contracted paprika within the household

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Household consumption of paprika (%)							
Low (<10%)	46.5	19.4 (39.90)	17.5 (52.44)	9.6 (53.25)	22.2 (52.49)	18.7 (45.71)	5.6 (33.80)
Medium (10-30%)	13.8	7.7 (15.87)	4.2 (12.59)	1.9 (10.39)	2.3 (5.52)	7.7 (18.86)	3.7 (22.54)
High (>30%)	2.6	1.2 (2.40)	1.2 (3.50)	0.2 (1.30)	1.2 (2.76)	0.9 (2.29)	2 (0.5 (2.82)
Not known	37.1	20.3 (41.83)	10.5 (31.47)	6.3 (35.06)	16.6 (39.23)	13.6 (33.14)	6.8 (40.84)

The consumption of produced paprika was mainly low among households (46.5%) (Table 9.27). The greatest percentage of high consumption was reported within medium-income households (3.50%) and households with small (2.76%) and large CF land (2.82%).

Table 9.28 shows that households with sufficient CF income experienced less hungry months (max. 8, mean 5.64 months) compared to households with partially sufficient (max. 11, mean 6.64 months) and insufficient CF income (max. 12, mean 6.64 months).

Table 9.28 CF income sufficiency and food security

CF income sufficiency	**Number of hungry months**			
	Minimum	*Maximum*	*Mean*	*SD*
CF income sufficient	0	8	5.64	2.421
CF income partially sufficient	0	11	6.64	1.370
CF income not sufficient	0	12	6.64	1.442

9.3.5 Future Plans Related to Contracting

The majority of surveyed households (98.6%) stated they intend to stay in contract farming arrangements for paprika in the coming years (Table 9.29). Low-income households (99.04%) and households with large CF land (100%) expressed their plan to remain under CF to the greatest extent across groups. In addition, 55.4% of households planned to extend their contracting to other crops. High-income households (72.73%) and households with large CF land (61.97%) were the most ready to expand CF compared to other household types. On the contrary, low-income households (56.25%) and households with small CF land (46.96%) were the most reluctant to expand their CF to other crops across all groups.

Table 1.1A in Appendix B indicated that households in the Lilongwe district showed considerably higher percentages in not wanting to expand contract farming to other crops (NKH=23%, LLW=52%) compared to the Nkhotakota district.

Table 9.29 Households' plans for contracting in the coming years

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels % of total N*** *(% within the type)*			***Land allocated to CF % of total N*** *(% within the type)*		
	%	LMI (n=208)	MMI (n=143)	HMI (n=77)	SLA (n=181)	MLA (n=175)	LLA (n=71)
Household's plan to stay in CF for paprika in the coming years*							
Yes	98.6	48.1 (99.04)	32.9 (98.6)	17.5 (97.40)	42.1 (99.45)	39.7 (97.14)	16.6 (100)
No	1.2	0.5 (0.96)	1 (0.2 (0.70)	0.5 (2.60)	0.2 (0.55)	0.9 (2.28)	0 (0)
Household's plan to expand contracting to other crops							
Yes	55.4	21.3 (43.75)	21 (62.94)	13.1 (72.73)	22.4 (53.04)	22.7 (55.43)	10.3 (61.97)
No	44.6	27.3 (56.25)	12.4 (37.06)	4.9 (27.27)	19.9 (46.96)	18.2 (44.57)	6.3 (38.03)

Note: *one missing response.

The topic of future plans regarding CF was explored during focus group interviews, too. The majority of small scale farmers stated they were willing to continue with paprika production for Company D. Nevertheless, the respondents requested changes in the contract, especially regarding inputs and credit provision and the price formulation process (chapter 10 and 11 deal with these issues in more detail).[107]

9.3.6 Estimating Determinants of Expanding Contracting to other Crops

The binary logit regression was used in this section to estimate determinants of households' willingness to expand contracting to other crops. The information on which variables are more likely to increase the likelihood of expanding CF has implications for Company D and the enabling environment (namely Government, NGOs and farmers' associations). By knowing which households are more likely to commit to additional contracting arrangements, Company D has a better foundation to expand (or not) its production base in particular districts or targeting specific household types. Also, the Government and supporting bodies can tailor their

[107] From focus group interviews conducted within eight communities, small-scale farmers from one community stated they were not ready to continue with their contracting.

promotion of CF to attract households with desirable characteristics and potentially increase the efficiency of contracting. Prior to regression, the test for multicollinearity was run.

A Chi-Square test for association preceded the binary logit model. The test was used to determine the willingness to expand contracting and following categorical variables: district, education, food expenses per month, monthly income, landholding size, proportion of land allocated to CF crop, CF yield/season, pesticide and fungicide costs per season, health expenses per month, distance from a household to collection point, timing when a household knows the price for paprika and sufficiency of CF income for households' yearly needs (Table 30).[108] All expected cell frequencies were greater than 5.

Table 9.30 Chi-Square test for association between willingness to expand contracting to other crops and set of categorical variables

Variable	Pearson Chi-Square (χ^2)	df	*p*-value	Cramer's V
District	40.235 (38.861)**	1	0.000 (0.000)	0.312
Education	14.655**	2	0.001	0.189
Expenses for food/month	17.078**	2	0.000	0.204
Households' monthly income$^{\Delta}$	23.834**	2	0.000	0.240
Landholding size	16.140**	2	0.000	0.198
Proportion of land allocated to CF crop	15.499**	3	0.001	0.194
CF yield/season	20.236**	2	0.000	0.222
Pesticide cost/season	18.270**	3	0.000	0.210
Fungicide cost/season	26.723**	3	0.000	0.254
Health expenses/month$^{\Delta}$	18.936**	3	0.000	0.215
Distance from household to collection point$^{\Delta}$	6.343*	2	0.042	0.124
Timing when household knows the price for paprika	11.800**	2	0.003	0.169
Sufficiency of income from CF for household's yearly needs	6.060*	2	0.048	0.121

Note: Numbers in brackets report Yate's Continuity Correction and related *p*-value and are calculated in the case of 2x2 tables. $^{\Delta}$Monthly income, health expenses/month and distance to the collection point showed to be significant in the Chi-Square test but later in the modelling process were excluded as they were decreasing the strength of the model. * significant at 5%, ** significant at 1%.

[108] All categorical variables are described in Table 9.31.

The Chi-Square test indicated there was a statistically significant association between willingness to expand contracting and the stated variables. The association was moderately strong between willingness to expand contracting and the district ($\chi^2(1) = 40.235$, $p=0.000$, Cramer's V=0.312) and weak in all other cases.

Table 9.31 shows results for the test for multicollinearity. There was no strong multicollinearity among variables as the mean VIF was 2.36, all VIF values were less than 10, and all tolerance values were greater than 0.1.

Table 9.31 Test for multicollinearity between variables used in binary logistic regression model (STATA output)

Variable	VIF	1/VIF
District	1.35	0.7388
Primary education	2.96	0.3374
Secondary education	2.95	0.3391
Low food expenses/month	1.43	0.6993
High food expenses/month	1.44	0.6930
Small landholding size	2.32	0.4315
Large landholding size	2.56	0.3910
Small % of land allocated to CF	1.29	0.7724
Large % of land allocated to CF	1.28	0.7818
Low CF yield/season	1.57	0.6355
High CF yield/season	1.47	0.6824
Low pesticide costs/season	2.79	0.3590
Medium pesticide costs/season	2.95	0.3392
High pesticide costs/season	2.53	0.3948
Low fungicide costs/season	2.24	0.4469
Medium fungicide costs/season	2.36	0.4239
High fungicide costs/season	2.15	0.4650
Price known after the harvest	1.14	0.8754
Price known before or after the delivery	1.13	0.8823
CF income partially sufficient	5.30	0.1886
CF income not sufficient	5.41	0.1849
Mean VIF	**2.36**	

Table 9.32 describes predictor variables tested in binary logit regression model. The table indicated that 54.9% of small-scale farmers were willing to expand their contractual arrangement to other crops.

Table 9.32 Descriptive statistics of the variables used in binary logistic regression

Variable	Expanding, %		Mean	SD
	Yes	No		
Expanding	54.9	45.1	0.5487	0.4982
Socio-economic variables				
District*	76.6	23.4	0.2945	0.4563
Primary education	55.3	44.7	0.7440	0.4369
Secondary education	64	36	0.1794	0.3841
No education	25	75	0.0766	0.2662
Food security conditions variables				
Low food expenses/month	44.7	55.3	0.3628	0.4813
Medium food expenses/month	55	45	0.4081	0.4920
High food expenses/month	70.8	29.2	0.2291	0.4207
Household's farm characteristics variables				
Small landholding size	46.4	53.6	0.3341	0.4722
Medium landholding size	75.4	24.6	0.1456	0.3531
Large landholding size	55	45	0.5203	0.5001
Low % of land allocated to CF	52.3	47.7	0.2095	0.4074
Medium % of land allocated to CF	48.1	51.9	0.5000	0.5006
Large % of land allocated to CF	68.9	31.1	0.2905	0.4545
Low CF yield/season	45.5	54.5	0.2638	0.4412
Medium CF yield/season	46.2	53.8	0.3429	0.4752
High CF yield/season	68.9	31.1	0.6929	4.8476
Inputs-related variables				
Low pesticides costs/season	50.6	49.4	0.4228	0.4945
Medium pesticides costs/ season	64.2	35.8	0.2518	0.4345
High pesticides costs/season	73.3	26.7	0.1069	0.3093
Not known pesticides costs/no use	43.5	56.5	0.2185	0.4137
Low fungicides costs/season	57.5	42.5	0.3468	0.4765
Medium fungicides costs/season	72.7	27.3	0.2090	0.4071
High fungicides costs/season	61.3	38.7	0.0736	0.2614
Not known fungicides costs/no use	41	59	0.3705	0.4835

Note: * In Nkhotakota. In Lilongwe, 45.8% of households were willing to expand their contracting to other crops.

Table 9.32 Descriptive statistics of the variables used in binary logistic regression - *Continued*

Variable	Expanding, %		Mean	SD
	Yes	No		
CF variables				
Price known before the harvest	54.4	45.6	0.3230	0.4681
Price known after the harvest	52.6	47.4	0.6318	0.4828
Price known before or after the delivery	89.5	10.5	0.0451	0.2078
CF income sufficient	77.3	22.7	0.0523	0.2228
CF income partially sufficient	56.5	43.5	0.5677	0.4959
CF income not sufficient	49.4	50.6	0.3800	0.4859

Small-scale farmers in Nkhotakota (76.6%) were keener to expand their contracting activities compared to small-scale farmers in Lilongwe (45.8%) (Table 9.32). The results also pointed that the higher the education level, the more willingness was shown to expand contract farming (no education=25%, primary=55.3%, secondary=64%). Similarly, small-scale farmers who had high (70.8%) or medium food expenses for food/month (55%) were more willing to expand contracting activities than small-scale farmers with low food expenses/month (44.7%). Households with a medium landholding size (75.4%), a large proportion of land allocated to CF (68.9%) and high paprika yields per season (68.9%) were willing to expand their contracting to other crops to the highest extent considering the landholding size, land allocated to CF and yields obtained from the contracting crop.

In terms of input usage, households that had high pesticides costs (73.3%) and medium fungicides costs (72.7%) were more interested to extend contracting activities. Small-scale farmers who were informed about the price before or after the delivery (89.5%) were more willing to expand their contractual relationship compared to small-scale farmers who were informed before (54.4%) or after the harvest about the price (52.6%). Finally, households who reported that the income from the CF was sufficient for their yearly needs (77.3%) were more willing to add another contracting crop to their farming activities compared to households with partially sufficient (56.5%) and not sufficient CF income (49.4%).

Further, Table 9.33 displays results of the binary logistic regression performed to assess the effect of 21 predictor variables (district, primary and secondary education, low and high expenses for food/month, small and large landholding size, low and large proportion of land allocated to CF crop, low and high CF yield/season, low, medium and high costs of pesticides and fungicides per season, price known after the harvest, price known before or after the delivery, and partially sufficient and not sufficient CF income) on the likelihood that households will expand their contracting to other crops.

The model consisting of 21 variables was statistically significant, $\chi^2(21, N=410) = 126.94$, $p<0.001$. This model explained 35.6% (Nagelkerke R^2) and 26.6% (Cox and Snell R^2) of the variance in willingness to expand contracting, and it correctly classified 72.2% of cases.

Table 9.33 indicates that, from 21 predictor variables, 13 were statistically significant. The large landholding size, low and medium pesticide costs and CF partially sufficient and not sufficient were statistically significant at 5%. The district, primary and secondary education, small landholding size, large proportion of land allocated to CF crop, high CF yields/season and low and medium costs of fungicides were significant at 1%.

The strongest predictors of willingness to expand contracting were primary and secondary education (odds ratio of 9.25 for primary and 10.16 for secondary education). This means that households with a head that had primary or secondary education were over 9 and 10 times more likely to expand their contracting for other crops compared to households whose head had no education. Households in the Nkhotakota district were over three times (odds ratio of 3.62) more likely to expand their contracting than households in the Lilongwe district.

Table 9.33 Binary logistic regression estimating determinants of expanding CF

Variables	Coefficient	S.E.	Wald	*p*-value	Odds Ratio
District	1.288**	0.307	17.589	0.000	3.627
Socio-economic variables					
Primary education	2.225**	0.541	16.934	0.000	9.252
Secondary education	2.319**	0.597	15.070	0.000	10.160
Food security conditions variables					
Low food expenses per month	-0.189	0.284	0.445	0.505	0.828
High food expenses per month	0.576	0.349	2.717	0.099	1.778
Household farm characteristics variables					
Small landholding size	-1.676**	0.415	16.266	0.000	0.187
Large landholding size	0.967*	0.404	5.726	0.017	0.380
Low % of land allocated to CF crop	0.123	0.321	0.146	0.702	1.131
Large % of land allocated to CF crop	0.875**	0.296	8.705	0.003	2.398
Low CF yield/season	0.497	0.328	2.296	0.130	1.644
High CF yield/season	0.776**	0.293	7.041	0.008	2.174
Inputs-related variables					
Low pesticides costs/season	-0.857*	0.391	4.817	0.028	0.424
Medium pesticides costs/season	-0.918*	0.464	3.910	0.048	0.399
High pesticides costs/season	-0.331	0.639	0.269	0.604	1.393
Low fungicide costs/season	1.033**	0.369	7.822	0.005	2.809
Medium fungicide costs/season	1.275**	0.436	8.550	0.003	3.580
High fungicides costs/season	-0.913	0.736	1.541	0.214	0.401
CF variables					
Price known after the harvest	-0.097	0.254	0.147	0.702	0.907
Price known before or after the delivery	1.643	0.937	3.079	0.079	5.173
CF income partially sufficient	-1.322*	0.615	4.622	0.032	0.267
CF income not sufficient	-1.399*	0.628	4.957	0.026	0.247
Constant	-0.528	1.029	0.264	0.608	0.590
Diagnostic statistics					
$\chi^2_{(21)}$ (df)	126.94**				
Nagelkerke R^2	0.356				
Cox and Snell R^2	0.266				
Sig.	0.001				
% of cases predicted correctly	72.2%				
N	410				

Note: * significant at 5%, ** significant at 1%.

Food security conditions variables did not show a significant impact on farmers' willingness to expand contracting arrangements to other crops. Concerning farm characteristics, households with large landholding size were more likely to expand their contract farming and households with small landholding size were less likely to expand their contracting compared to households with medium landholding size. Households that allocated a large proportion of their land for CF were over two times (odds ratio of 2.39) more likely to expand contracting activities than households with medium proportions allocated to CF land. In terms of yields, households with high CF yields/season were more likely to extend CF compared to medium-yield households.

Inputs-related variables showed significant effects on expanding household contracting activities. However, pesticides and fungicides showed opposite results. Households facing low and medium pesticide costs/season were less likely to expand their CF compared to households with not known costs/season or no use of pesticide. In contrast, households with low and medium fungicide costs/season were more likely to expand their CF activities compared to households with not known costs/season or no use of fungicides. Households that found CF income partially sufficient or insufficient for their yearly needs were less likely to expand contracting to other crops compared to households whose CF income was sufficient. The result showed that the following coefficient of variables had expected sign (see chapter 7, section 7.6.3.2 on estimating determinants of expanding contracted production): district; primary and secondary education; expenses for food/month; landholding size; low proportion of land allocated to CF crop; high CF yield/season; high pesticides and fungicides costs/season; and low fungicide costs/season.

9.4 Discussion

9.4.1 Motivation behind Contracting

This study found that input provision, a guaranteed market and extension services were the key drivers for entering the contract. The study results showed variations among households since the importance of access to inputs decreased as income levels of the household increase. The higher the cost of fungicides, the more important it was to access those inputs through the contract. Similarly, access to credit was more important where costs for fertilisers, pesticides and fungicides were

high. The costs for pesticides and fungicides across households were reported as low. Yet, one of the most important inputs, fertiliser, represented a high cost for small-scale farmers.

Although contract farming might grant access to needed fertilisers through loans, in the case of the paprika supply chain, the contract did not provide any inputs except seeds (the issue of poor input provision is elaborated in more detail in chapter 10 and 11). The signed contract for paprika offered to secure extension services (mainly training while storage and transport services were not included) and guaranteed a market for small-scale farmers but the input provision was limited. The study's findings correspond to some of the factors found in the extensive literature: the key factors for entering CF are access to market, guaranteed market price, stable income, access to credits and quality inputs, risk sharing, reduced production and marketing costs, and technical assistance (Echánove and Steffen, 2005; Masakure and Henson, 2005; Swinnen and Maertens, 2007; Guo *et al*., 2007; Imbruce, 2008; Sharma, 2008; Vavra, 2009; Schipmann and Qaim, 2011; Abebe *et al.*, 2013; Briones, 2015).[109]

The majority of surveyed households allocated 10-30% of their land to CF crops. Most of the households produced over 200 kg of dried paprika per season, which was initially categorised as 'high' yield. For comparison purpose, the studies from Agar and Chilligo (2008), CYE report (2009) and Makoka *et al*. (2010) indicated that small-scale farmers, without using additional inputs, could yield between 150 and 500 kg/ha, while estimated average yield was between 375-600 kg/ha.[110] Assuming that an average farmer in three studies from Malawi had 1 acre (0.4 ha), this means that an average yield would vary between 151-242 kg/acre, which is similar to what was recorded in this study. By comparing the yield that small-scale farmers achieved with volumes in the case of irrigated production or on estates, it can be concluded that the yield of paprika was low. In contracted production, the yield is explicitly related to income generation. Although the household questionnaire indicated that contract farming influenced households' livelihoods

[109] This part revisits the literature review in chapter 4.
[110] The three studies report great variations in possible paprika yields. This reflects the situation on the ground as yields for paprika differed considerably among farmers in the study mostly due to various levels of inputs usage and land size.

positively, it was also shown that the income was only partially sufficient to cover households' yearly needs.

The focus group interviews indicated that a small-scale farmer growing paprika on 1 acre of land and yielding 800-1,000 kg of dried paprika could earn between MKW 168,000-358,000 (US$ 350-760 per season). Comparing the findings from Agar and Chiligo (2008), CYE report (2009) and Makoka *et al*. (2010), two points can be further considered. First, the price for paprika in Malawi increased over the years from around MKW 150/kg in 2006/2007 season to MKW 850/kg in 2015/2016 season (see Figure 10.9 in chapter 10 for the latter price). This has a direct implication for small-scale farmers as it suggested that the potential income generated through contract farming was increasing. This statement applies to price solely and does not take into consideration the change in costs of living or inputs that might have also increased in the stated period. Second, small-scale farmers yielding 100-180 kg/acre could achieve profit of around MKW 40,000. The results from the focus group interviews were more likely to reflect potential profits from a well-equipped farm.[111]

About half of all surveyed households (48.6%) in the paprika supply chain reported low monthly income, which was less than US$ 22. Mean *per capita* income in the Nkhotakota district was US$ 52 and in the Lilongwe district US$ 60 in 2005, according to Malawi Data Portal (2015). Small-scale farmers in both districts earned income that was below average. Still, 48% of the population in Nkhotakota and 37.5% of the population was categorised as 'poor' (Malawi Data Portal, 2015). The low monthly income suggested that small-scale farmers would be mostly concerned with securing enough food for their families throughout the year, which can conflict with obligations regarding the contracted crop and can eventually lead to poorer yields and quality and low-income generation. All households, however, stated that the income earned from contract farming activities is very important for their

[111] This inference is made based on the indicated yield of 720 kg/acre achieved on the commercial farm (CYE report, 2009). The value of MKW 213,640 income per season is within the frame reported during focus group interviews. If the increase in the price that occurred since 2007/08 season is incorporated - it can be confirmed that potential profits reported in the focus group interviews are feasible but not for an average small-scale farmer. Rather they can be achieved by a better off small-scale farmer, which was suggested earlier in section 9.3.5 of this chapter.

livelihoods, which suggests that the importance of contract farming for small-scale farmers in two districts is considerable.

At this point, the study's findings suggested that contract farming had an overall positive influence on small-scale farmers' livelihoods as it provided access to paprika seed, extension services, a guaranteed market and, ultimately, enabled income generation for rural households in two Malawian districts. Other studies such as Echánove and Steffen (2005), Chirwa and Kydd (2009), Fréguin-Gresh *et al*., (2012), Fréguin-Gresh and Anseeuw, (2013) and Narayanan (2014) reported a similar positive influence of contract farming (see Appendix A, especially under '*Positive contract impact*'). This is not to claim there were no challenges in the studied contractual arrangement. For instance, small-scale farmers received the information on the price for a contracted crop from the extension worker (i.e. it was not stated in the contract) and mainly after the harvest, which potentially reduced farmers' opportunity to accurately plan for income generation and increased the risk of side-selling. Thus, key challenges in the paprika supply chain were further explored in chapter 10 to follow.

9.4.3 Expanding Contract Farming Arrangement

Small-scale farmers stated they were very satisfied with the current relationship with Company D. A considerable percentage of households (42.3%) reported that they increased their plot size and some small-scale farmers reported that involvement in contracting enabled them to purchase assets and inputs and send children to school. Moreover, 55% of households stated they would be ready to expand their contracting to other crops. Expanding contractual relations to other crops could increase small-scale farmers' financial capacities through better income generation and consequently result in more food secure livelihoods. By engaging in CF for other crops, small-scale farmer might receive additional training on farming practices and improve production levels of other (food) crops too due to acquired knowledge.

Having contracted production for a number of crops might increase production and marketing risks to a greater extent compared to growing food crops. Households that were more likely to expand their contracting included ones with primary or

secondary education, high expenses for food/month, medium all-land size, with larger proportions of CF land and low to medium expenses for fungicides/season. This indicates that educated, slightly better off and small-scale farmers already more engaged in CF production are an optimal choice for Company D to expand its supplier base for other crops.

9.5 Summary

This chapter explored the influence of contract farming on small-scale farmers' livelihoods. The chapter started by identifying key motivating factors for joining CF. Small-scale farmers pointed out that access to inputs, a guaranteed market and extension services were the main reasons they entered into a business relationship with Company D. This study found that contract farming had a mixed influence over contracted small-scale farmers in terms of productivity, income generation and food security. The next chapter, chapter 10, explores in detail the key challenges in the paprika supply chain.

Chapter 10 Key Challenges in Contract Farming: Contract Design and Side-selling

10.1 Introduction

Chapter 10 provides an analysis and interpretation of collected quantitative and qualitative data with the aim of identifying, describing and analysing the key challenges in the contractual relationship within the supply chain (*Objective 3*). This chapter answers the related research sub-questions of*: What are the key challenges in Malawi's paprika supply chain? How do the structure and the content of the contract for paprika support efficient and sustainable relations? What is the level of side-selling in the paprika supply chain and which factors influence small-scale farmers' engagement in side-selling?* From this chapter on, the study focuses on the key challenges in the Malawian paprika supply chain.

10.2 Section 1: Key Challenges Identified in Contract Farming Relations in the Paprika Supply Chain

This section describes key challenges found in the studied case. Figure 10.1 depicts challenges and correlations found in the case of contract farming in Malawi's paprika supply chain. Analysis of the focus group interviews, semi-structured interviews and email correspondence identified in total 12 critical factors (major themes), which directed relationships in the supply chain. Themes were grouped and presented as three primary challenges (meta-themes).

10.2.1 Challenges related to input provision, low trust level and previous negative experience

Challenge 1: Poor input provision in the contract can be attributed to the low level of trust between parties. Low trust was based on negative experiences with previous contracting.

In the focus group interviews, small-scale farmers stated that paprika cultivation requires specific inputs, such as seeds, fertilisers, sprayers, and chemicals. Besides seeds, the current contract did not provide any inputs. Small-scale farmers stated that

the negotiation with Company D concerning providing needed inputs or loans was not sufficient. Some small-scale farmers compared the paprika and tobacco sectors, emphasising that small-scale farmers growing tobacco received needed inputs or loans. Small-scale farmers remained determined in their claims that inputs should be an essential part of the contract design.

During the interview, Company D representatives explained why the current contract did not offer more inputs. Company D's decision to deny required inputs to small-scale farmers on credit was informed by previous negative experiences. Company D stated that, in the past, the contract ensured inputs on credit but small-scale farmers did not repay the loans. Small-scale farmers who received inputs turned to side-selling. Company D's CEO was reluctant to include inputs in the contract believing that small-scale farmers would misuse inputs again, and Company D would have to deal with reduced volumes of the crop.

The processor of contracted paprika confirmed Company D’s concerns related to the waste of inputs by highlighting that small-scale farmers usually followed the buyer offering the highest price for the crop, regardless of who provided inputs. In other words, Company D secured the seed through the contract since the cost of the seed was low. Company D did not supply costly fertilisers, pesticides or herbicides because of small-scale farmers’ likeliness to side-sell.

Representatives of the paprika supply chain environment had the experience with small-scale farmers. For example, a consultant working with supply chains in Malawi pointed out that small-scale farmers demanded free provisions in the contract and long paying back periods for their loans. The image of Malawian small-scale farmers who either took long to repay the loans or did not repay them at all dominated in the paprika supply chain. The negative experience with loans influenced the overall trust among players in the supply chain. Company D did not trust small-scale farmers because of side-selling practices.

On the small-scale farmers' side, the main causes of mistrust towards Company D were the low price paid and non-transparent grading system. Small-scale farmers used stated reasons to justify their side-selling (link to *Challenge 2*, see Figure 10.1).

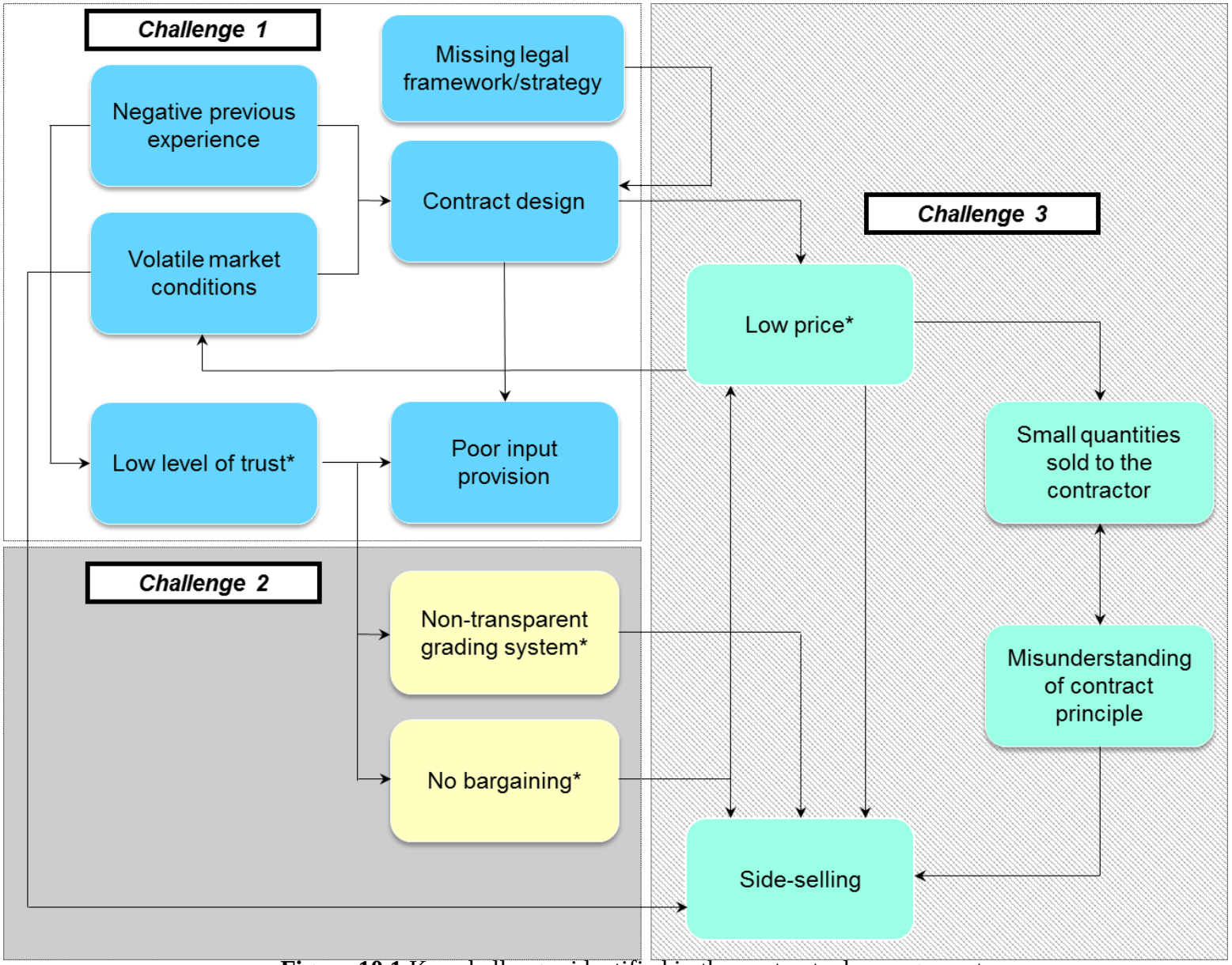


Figure 10.1 Key challenges identified in the contractual arrangements

Note: *critical factors in Company D and small-scale farmers' relationship where vendors provide alternatives for small-scale farmers.

Apart from Company D as a formal marketing channel for paprika, another informal channel was identified in the paprika supply chain - vendors. Vendors filled in specific gaps in the relationship between Company D and small-scale farmers (see '*' in Figure 10.1). For example, contrary to the low trust level in the supply chain, vendors stated that the trust between them and small-scale farmers existed due to open and friendly relations, especially concerning the grading system and bargaining over the price. While Company D did not provide the required inputs because of previous experiences and low trust in small-scale farmers' compliance with repayment and delivery conditions, vendors represented an alternative 'trustworthy' outlet for small-scale farmers.

Returning to the starting point - the issue of an inadequate contract design was identified as the greatest obstacle in the paprika supply chain (this theme is further developed under *Challenge 2* and *3* and revisited in chapter 11.). Small-scale farmers emphasised that the contractor did not specify the price for CF paprika in the contract, so they were not informed about the price on time (i.e. early in the cultivation process). On the other side, the enabling environment recognised the issue with the design and attributed the challenge of the poorly formulated contract to the absence of a national legal framework. The main role of the legal framework, i.e. the national Contract Farming Strategy, was believed to be in providing guidelines on how to organise the relationship between the contractor and small-scale farmers and establishing legal support for contract farming. The Strategy will represent a key document influencing contract design in the future.[112]

Small-scale farmers stated that the presence of Government is needed in CF, especially in regulating the market and the number of buyers. Small-scale farmers felt that the Government has the responsibility to break the monopoly of only one paprika buyer and assist with marketing. When confronted with this proposition from small-scale farmers, the Government, however, responded that, through the Strategy, their role is to facilitate CF arrangements and not interfere with the market or pricing.

[112] The Strategy was building on a previously existing document from Malawi's Government. The re-drafting of the Strategy started in 2008. At the time of the study (2013-2016), the Strategy was still not officially released.

10.2.2 Challenges related to lack of participation in contract design

Challenge 2: Small-scale farmers lacked the opportunity to bargain and participate in the design of the contract. This limitation resulted in small-scale farmers' reduced sense of responsibility for complying with agreed terms and led to the breach of contract.[113]

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Bargaining represented a challenge for the majority of small-scale farmers in paprika supply chain. Only one out of eight groups of small-scale farmers stated that Company D included them in discussion regarding the price and grades. The rest of the small-scale farmers reported that they were not given an opportunity to change terms in the contract. Company D defined prices, and small-scale farmers' attempts to negotiate with Company D were not successful.

Company D's representatives responded that it was inefficient to bargain with an individual smallholder due to geographical dispersion of suppliers and low quantities for trading. Company D encouraged collective action, so that small-scale farmers as a group might gain negotiation power based on substantial amounts delivered. In contrast, vendors gained an advantage as Company D offered fixed prices. Vendors were able to discuss the price with small-scale farmers and provide higher amounts than Company D.

Grading was a point of dispute in the paprika supply chain (see Figure 10.2). Company D usually graded paprika into four grades by referring to international market standards since the contracted paprika was further exported. Company D stated that the grading process was subjective and dependent on the visual interpretation of the buying team on the spot. Small-scale farmers reported that they did not participate in establishing grading rules.

Small-scale farmers described the existing grading system as non-transparent and arbitrary and provided examples where Company D classified the same crop into different grades.

[113] Triangulation of interview transcripts for Challenge 2 is located in Table 1.6A in Appendix B.

Figure 10.2 Paprika during marketing days

Note: Differences are between grades A (B and C included) and D. In 2014/2015 season, Company D had a different grading system were grade A was bought for ~ MKW 550 and grade B for ~ MKW 450.

Some small-scale farmers stated that they turned to side-selling due to the lack of a right to bargaining and the unfair grading system (link to *Challenge 3*, see Figure 10.1).

Interviewed vendors developed the grading system using two instead of four grades. Vendors stated that using two grades attracted small-scale farmers who complained about Company D's grading. Vendors confirmed that grading was a subjective process. By classifying the crop in two grades vendors aimed to avoid biases in visual assessment.

10.2.3 Challenges related to the breach of contract

Challenge 3: The price offered in the contract did not match small-scale farmers' expectations. Hence, small-scale farmers turned to selling the crop to vendors for a higher price.[114]

The exact price was not defined in the contract, and Company D announced prices to small-scale farmers after the harvest, i.e. one month before the purchasing period. Small-scale farmers perceived the contract price offered by Company D as low compared to the vendors' price. Besides, small-scale farmers stated that distribution of benefits in the chain was unequal since Company D gained the most by offering the lower price and selling the crop at a higher price. The low price discouraged small-scale farmers from selling the entire crop to Company D, and some small-scale farmers reported that they sold more paprika to vendors than to Company D.

During the focus group interviews, a misunderstanding of contracting principles was observed. For example, small-scale farmers claimed that the contract did not limit them to sell the crop to any buyer on the market. When Company D's prices were lower than promised or expected, small-scale farmers sold the crop for the higher price to vendors. One of the consultants stated that majority of small-scale farmers did not understand contracts and were dishonouring the terms due to occasional price improvements. Vendors reported that small-scale farmers' misunderstanding was a

[114] Triangulation of interview transcripts for Challenge 3 is located in Table 1.7A in Appendix B.

result of the contract itself since the language used was not consistent. Some contracts were written in English and others in Chichewa, which is the national language of Malawi. Nonetheless, when compared, vendors observed that two contracts differed in their meanings and introduced potential misconceptions.

Company D's representatives stated that the contract was designed considering market conditions, namely international market prices and demand for paprika, Company D's overhead costs and previous experiences with contracting in Malawi. Company D explained that the price was not indicated in the contract due to uncertainties in the international market, Chinese influence on the price and an attempt to protect the contracted crop against side-selling. As well, the price in the contract depended on the negotiation between Company D and the processor of contracted paprika.[115]

Company D confirmed that some small-scale farmers did not sell the entire crop to the buying team. Field officers provided an example where a smallholder delivered 10-20% of the whole volume produced to the purchasing point while the rest of the crop was sold to the vendor. Company D concluded that the main reason for side-selling was the higher price offered by vendors. The processor explained that vendors offered a high price because they do not act as input providers and do not carry any risks. Vendors had the financial means to purchase a few tonnes of paprika, compared to Company D, which was buying hundreds of tonnes. Company D was losing the crop by competing with the vendors who were able to pay a premium price for smaller volumes.

Concerning the price, vendors offered higher prices compared to Company D's offer. Vendors stated that they used Company D's price as a benchmark and then added an extra amount to attract small-scale farmers. Besides the price, vendors explained that the main reason small-scale farmers preferred to sell the crop to vendors were payments in cash. Small-scale farmers usually needed the cash on delivery and vendors were able to pay for the crop on the spot. Vendors purchased paprika at small-scale farmers' doorsteps and eliminated the need for transporting the crop.

[115] A detailed pricing formula is outlined in section 10.4 of this chapter.

The market conditions mentioned earlier did not relate exclusively to an international market. In the paprika supply chain, market conditions refer to the number of active players, especially potential buyers. In this regard, vendors stated that the market for paprika showed sufficient demand and the issue was to secure required quantities. In contrast, small-scale farmers under Company D's contract suggested that other buyers should enter the market and create competition by offering different contracts.

10.3. Section 2: Contract Design as a Challenge

10.3.1 Contract Structure

This section provides the layout and definitions of clauses found in the studied contract. The central features of the contract were Company D and small-scale farmer's obligations, and general conditions. Company D's obligations included: purchasing the crop, defining grades, paying and training small-scale farmer, and organising purchasing points. Small-scale farmers' obligations included: cultivating the crop, adhering to instructions regarding applied chemicals, and grading and selling the crop. General conditions were defined around quality failure, contract breach, and liability clauses. Table 10.1 displays the main contract clauses divided into three categories: defined, partially defined, and missing.

Defined Clauses

The studied contract (2013/14 season) began with identifying the parties who had entered into an agreement. The contract continued with an outline of the nature of the relationship between the parties and the exact duration of the contract. The amount of paprika expected from small-scale farmers was emphasised several times throughout the contract. The input provided in the contract was defined in various volumes. The contract specified the payment conditions and mandatory instructions regarding crop cultivation for small-scale farmers. Under the general conditions, the contract defined the following clauses: the consequences in the case of quality failure, clarification of contract breach, and Company D's disclaimer of liability regarding the price guarantee, input provisions, and any incidents that occurred. The contract was concluded with the signatures of parties and their representatives.

Table 10.1 Identification of the main contract clauses in the structure of Malawi's contract for paprika production and marketing

Contract clause	2013/14 season
Parties to the contract	(+)
Preamble	(+)
Duration	(+)
Input provision	(+)
Quantity	(+)
Delivery conditions	(-)
Grades	(-)
Price	(+/-)
Payment	(+)
Training	(+)
Quality failure	(+)
Breach	(+)
Liabilities	(+)
Termination	(-)
Disputes	(-)
Force majeure	(-)
Applicable law	(-)
Signatory	(+)

Note: (+) = defined, (+/-) = partially defined, and (-) = missing clauses in the contract.

Partially Defined Clause

Price was partially defined in the Malawian contract. The clauses mentioning the price were identified twice in the contract: under Company D's obligations and within general conditions. In both cases, the clauses did not specify the figure as expected reimbursement for the delivered crop. However, the clauses indicated the procedure for price determination. The delimitation of Company D's responsibility for guaranteeing the price was explicitly stated in the contract.

Missing Clauses

The clauses defining delivery conditions and different grades for paprika were not included in the studied contract. The contract did not specify the conditions for

terminating the agreement. The appeal to the applicable law and options for settling the possible disputes between the parties were not contained in the contract. The contract did not involve the clause clarifying responsibilities in the case of *force majeure* events.

Differences in Contract Structure of Two Malawian Contracts

The contract from the 2010/2011 season was available through the FAO database and under this section it is briefly compared to the contract from the 2013/2014 season. Company D adopted the contract from the 2010/2011 season from their antecedent (see chapter 8, section 8.2.2.1 on Company D's background). The structure of compared contracts varied considerably in two most important aspects. First, the contract from the 2010/11 season outlined the minimum price for each of the five grades listed in the contract. As noted under the previous section (see *Partially Defined Clause* in this chapter), the studied contract partially defined the clause on price and did not include grades. Second, regarding breach, the studied contract expanded on the contract from 2010/11 and included the statement that Company D breaches the contract if it does not purchase the contracted crop. The studied contract contained the clause specifying English as the working language. The rest of the clauses appeared in both contracts and remained similar in their content.

10.3.2 Contract Content

This section summarises the key clauses of the studied contract (Table 10.2). The studied contract was drafted as an agreement between two parties; Company D on the one side, and the outgrower or association on the other side. The preamble of the contract defined that the outgrower entered the contract with the purpose of growing contracted paprika for and on behalf of Company D. The contract was agreed to last one season, which started on the day of purchasing the seed and continued until the last part of the crop was sold.

The seed was the only input supplied through the contract, and Company D sold the packets of seed to outgrowers on a cash basis. The crop was further defined as all paprika produced was using bought seed packets. According to the contract, the outgrower was obliged to sell the entire crop exclusively to Company D.

Table 10.2 Content of the contract for paprika in Malawi

Contract clause	Content
Parties to the contract	Outgrower (individual or group) and Company D
Preamble	Outgrower grows paprika for and on behalf of Company D
Duration	One season
Input provision	Seed only; cash in advance
Quantity	All crop grown using the seed sold by Company D
Delivery conditions	Not defined
Grades	Not defined
Price	Company D's decision; based on the prevailing market prices, currency fluctuation, and demand; split by grade; not explicitly defined; no bargaining
Payment	Cash; immediately or within two weeks
Training	Instructions by Company D and third party, especially on grading and cultivation
Quality failure	Downgrading, price reduction, or rejection
Breach	Side-selling, purchase refusal
Liabilities	Producer: cultivation, grading, selling; Company D: purchase
Termination	Not defined
Disputes	Not defined
Force majeure	Not defined
Applicable law	Not defined
Signatory	Group's/association's chairman and secretary, Company D's representative and one witness

Grading was foreseen on the marketing day, where a complete description for each grade is provided, and parties agree on identified grades. Company D retained the right to determine the price. The price was subject to the world market price, fluctuation in exchange rates and demand for paprika. Company D's obligation was to make cash payments to the outgrower on the day of purchase or within two weeks. Company D had to organise central purchasing points not more than 30 kilometres from the original growing area if outgrowers delivered, at least, three tonnes of paprika.

The contract included training on cultivation and grading practices, provided by Company D and the Ministry of Agriculture. The outgrower agreed to follow

instructions, especially on recommended chemicals usage. The failure to deliver the agreed quality of the crop was regulated through the contract by Company D's right to: reduce the price of the crop, downgrade the crop, or reject the crop. The contract defined breach in two cases. First, the outgrower was breaching the contract if paprika was not sold to Company D. Second, Company D was breaching the contract if the contracted paprika was not purchased.

The liability clauses were defined in the form of disclaimer. Company D claimed no responsibility for outgrower's injury, health or death incidents during growing and transporting processes. Company D did not accept liability for supplying inputs, such as chemicals, fertiliser or finances. Company D did not guarantee the price at which paprika would be purchased.

The signatory clause required signing the contract so that each party had read and fully understood the content. The signing parties included the chairperson and secretary of the farmers' association, a Company D's representative, and a witness.

10.4 Section 3: Side-selling as a Challenge

10.4.1 Extent and Economic Implications of Side-selling

As stated several times throughout this study, side-selling was one of the major challenges in contract farming arrangements. The households' survey captured the extent of side-selling among contracted small-scale farmers in the Nkhotakota and Lilongwe districts (Table 10.3).

Table 10.3 shows that 36.9% of households were engaged in side-selling practices. Medium-income households (47.6%) and households with small CF land (38.7%) were the ones with the highest percentage of side-sellers among household types. Low-income households (26.4%) had the least percentage of side-sellers across all groups. High-income households sold a low proportion of their paprika to Company D in 21% of cases, which was the highest recorded percentage of low proportion sold among household types. The most loyal of all types were households with small land allocated to the CF crop (74.6%) which sold large proportions of their CF crop to Company D.

Table 10.3 Side-selling extent in the two studied districts

Variable	Both districts Nkhotakota and Lilongwe (N=428)						
	Total N	***Income levels, %***			***CF land allocated, %***		
	%	Low (n=208)	Medium (n=143)	High (n=77)	Small (n=181)	Medium (n=175)	Large (n=71)
Household side-selling paprika:							
Yes	36.9	26.4	47.6	45.5	38.7	34.9	38
No	63.1	73.6	52.4	54.5	61.3	65.1	62
Proportion of paprika sold to the contractor:*							
Low (Up to 30%)	15.6	18.3	9	21	13.8	18.9	12.7
Medium (31-70%)	13.8	9.7	23	7.8	8.8	19.4	12.7
Large (71-100%)	67.1	69.1	62.3	70	74.6	60.6	63.3
Unknown	3.5	2.9	5.7	1.2	2.8	1.1	11.3
Unknown	3.5	2.9	5.7	1.2	2.8	1.1	11.3

Note: *Table 10.3 summarises proportion of paprika sold to the contractor.

Small-scale farmers in the Nkhotakota district practised more side-selling compared to those in the Lilongwe district (NKH=52%, LLW=30.7%) (Table 10.4). It was confirmed that households in Nkhotakota sold low proportions of the CF crop to a greater extent than in the Lilongwe district (NKH=17.6%, LLW=14.9%). The Lilongwe district generally better complied with contract requirements regarding the quantity of the delivered CF crop as in this district, 69% of households delivered 70-100% of their paprika to the contractor. For comparison, in the Nkhotakota district, 62% of households did the same. The data generated from the household questionnaire and interviews with Company D's representatives were used to further investigate the issue of side-selling.

Table 10.4 Side-selling in the Nkhotakota and Lilongwe districts

Variable	Nkhotakota (N=125)						Lilongwe (N=303)					
	Income levels *(% of total N in NKH)*			***CF land allocated*** *(% of total N in NKH)*			***Income levels*** *(% of total N in LLW)*			***CF land allocated*** *(% of total N in LLW)*		
	Low (n=45)	Medium (n=44)	High (n=36)	Small (n=56)	Medium (n=55)	Large (n=13)	Low (n=163)	Medium (n=99)	High (n=41)	Small (n=125)	Medium (n=120)	Large (n=58)
Household engaged in side-selling of paprika												
Yes	14.4	21.6	16	28	23.2	0.8	12.2	13.5	5	11.5	10.6	8.6
No	21.6	13.6	12.8	16.8	20.8	9.6	41.6	19.1	8.6	29.7	29	10.6
Proportion of paprika sold to the contractor												
Low (Up to 30%)	4.8	2.4	10.4	11.2	3.2	3.2	10.6	3.3	1	3.6	9.6	1.7
Medium (30-70%)	7.2	7.2	3.2	4	11.2	2.4	3.6	7.9	0.7	3.6	6.6	2
Large* (71-100%)	22.4	24.8	15.2	27.2	29.6	4.8	38.3	19.1	11.6	33.3	22.8	12.9
Unknown	1.6	0.8	0	2.4	0	0	1.3	2.3	0.3	0.7	0.7	2.6

Note: *One missing response.

In particular, the information on potential losses for Company D that occur due to side-selling was relevant for assessing consequences of such opportunistic behaviour. For the calculation of potential losses in one season, the following scenario was considered:

- 10,000 small-scale farmers,
- 35 kg per small-scale farmer, total expected volumes are 350,000 kg of dried paprika [116]

Table 10.5 used the information gathered from the household questionnaire to calculate how many small-scale farmers sold different proportions of paprika to the contractor. The recorded percentages of different proportions of paprika sold to Company D in Nkhotakota and Lilongwe districts were translated into numbers for the scenario with 10,000 small-scale farmers. Table 10.5 indicates that 67.1% of small-scale farmers sold between 70% to 100% of their paprika to Company D. Also, 25.4% of small-scale farmers sold only up to 50% of their paprika to Company D.

Table 10.5 Proportion of small-scale farmers selling different volumes to the contractor

Percentage sold to Company D, %	**Small-scale farmers selling indicated proportions,** % from total N (428)	**Number of small-scale farmers** (scenario with 10,000 small-scale farmers)
<10	4.9	490
10-30	10.7	1,070
31-50	9.8	980
51-70	4	400
71-100	67.1	6,710
Unknown	3.5	350
TOTAL	**100**	**10,000**

Table 10.6 shows the calculation of minimum, average and maximum quantities sold for each range. The maximum quantity sold (100% value) is 35 kg of dried paprika and all other percentages were calculated in relation to this value.[117]

[116] The number of 10,000 small-scale farmers supplying paprika in one season is not modified and it was reported by Company D. Company D requested from the authors not to reveal the exact operative volumes in any written form. Thus, the researchers determined the average kg/small-scale farmer, but the decision was informed based on information received and shaped to provide as accurate an overall frame as possible.

[117] Quantities sold are calculated as the number of small-scale farmers for each range x minimum/average/maximum quantity for that range.

Table 10.6 Scenario for potential losses occurring due to side-selling: Minimum, average and maximum quantities sold [118]

Percentage sold to Company D – the range	A) Minimum quantities	B) Average quantities	C) Maximum quantities
<10%	1 kg	2 kg	3.4 kg
10-30%	3.5 kg	7 kg	10 kg
31-50%	11 kg	14 kg	17.5 kg
51-70%	18 kg	21 kg	24.5 kg
71-100%	25 kg	30 kg	35 kg
Unknown*	11 kg	14 kg	17.5 kg

Note: *For the category 'Unknown', average values (31-50%) were assigned to control for the final output and reduce over- or under-estimation of lost volumes.

Table 10.7 shows that if small-scale farmers were selling minimum quantities, the potential loss of volumes for Company D was estimated at 44.6%, which is the greatest loss across all categories. If small-scale farmers sold average quantities, Company D might have lost up to 32.3% of expected volumes. If small-scale farmers sold maximum quantities from each range, Company D could lose 19.9% of volumes. Regarding profits, Table 10.7 indicates that Company D might be losing between US$ 5,228 and US$ 11,714 due to side-selling practices.

[118] There are in total 6 ranges considered: (1) <10%, (2) 10-30%, (3) 31-50%, (4) 51-70%, (5) 71-100%, (6) Unknown. Each range has a minimum, average and maximum value. The minimum value represents the lower value of the range (e.g. minimum value for the range 31-50% is 31%). The maximum value represents the highest value of the range (e.g. maximum value for the range 31-50% is 50%). Finally, the average value represents the medium value of the range (e.g. average value for the range 31-50% is calculated as a mean of 31 and 50, i.e. 40.5%). Each of these percentages is then assigned to the value of 35 kg. Therefore, for the range 31-50%, the minimum value is 31% of 35 kg, which is ~11 kg. This procedure was followed throughout Table 10.6.

Table 10.7 Estimation of potentially lost volumes, revenue and profit in one season by Company D due to side-selling

Percentage sold to Company D, %	**Minimum quantities sold,** kg	**Average quantities sold,** kg	**Maximum quantities sold,** kg
<10	490	980	1,666
10-30	3,745	7,490	10,700
31-50	10,780	13,720	17,150
51-70	7,200	8,400	9,800
71-100	167,750	201,300	234,850
Unknown	3,850	4,900	6,125
Reported volumes, kg	193,815	236,790	280,291
Expected volumes, kg	350,000	350,000	350,000
Potential losses, kg	156,185	113,210	69,709
Potential losses	**44.6%**	**32.3%**	**19.9%**
Missing revenue (average 0.30$ per kg)	**US$ 46,855**	**US$ 33,963**	**US$ 20,913**
Missing profit (average 0.075$ per kg)	**US$ 11,714**	**US$ 8,491**	**US$ 5,228**

The contracted small-scale farmers argued that Company D had cheated them because prices offered were lower compared to the price on the informal market. The implication is that Company D incurred quantifiable losses. Estimated losses of volumes ranging from 19.9% to 44.6% could cause substantial negative consequences for Company D due to shortages in delivered quantities and increased transaction costs.

10.4.2 Reasons for Side-selling

The most prevailing reason for side-selling among small-scale farmers who sold their paprika outside the contract was the belief that other buyers offered higher prices (87.3%) (Table 10.8). This reason was stated by the high-income households (91.4%) and households with large CF land (92.6%) to the greatest extent.

Although the differences were small within groups, the medium-income households (85.3%) and households with small CF land (84.3%) quoted the higher price as the reason for side-selling to the least extent. This was contrary to the study's initial assumption that households with lower income and smaller CF land would have a higher incidence of side-selling because of a perceived higher price and scarce income sources. The surveyed households were engaging in side-selling because

they needed money quickly (36%) and/or they were not satisfied with the treatment under CF (12.6%). Households with small land allocated stated they needed money quickly to the greatest extent (41.4%) across all household types. In contrast, the households with large land allocated identified dissatisfaction with their treatment under the contract to the highest proportion (37%) as one of the key reasons for side-selling.

Table 10.8 Results from the household questionnaire: Reasons for side-selling in both districts (side-sellers only)

Variable	*Total N*	*Income levels* *(% within the type)*			*CF land allocated* *(% within the type)*		
	%	Low (n=55)	Medium (n=68)	High (n=35)	Small (n=70)	Medium (n=61)	Large (n=27)
Reasons for side-selling:							
Lack of trust towards the contractor	3.2	0	1.5	11.4	4.3	1.6	3.7
Money needed quickly	36	38.2	39.7	25.7	41.4	36.1	22.2
Offered higher price	87.3	87.2	85.3	91.4	84.3	88.5	92.6
Household does not care to whom it sells	8.9	1.81	19.1	0	11.4	8.2	3.7
Not satisfied with the treatment	12.6	10.9	14.7	11.4	12.9	1.6	37
Household has the right to decide to whom to sell	12	3.6	20.6	8.6	12.9	13.1	7.4

The argument about higher price offered by other buyers was further explored within the paprika supply chain through interviews and observations during the Company D's marketing days. First, Company D representatives were confronted with the argument. Second, vendors were interviewed to capture the difference in offered price.

Company D justified its pricing mechanism by stating that the costs of providing seeds and extension services are included in the final price. The main counter-

argument provided by Company D was that, due to costs of investments, Company D was not able to compete with vendors' prices:

> '*[…] if [Company D] said we are not [...] selling seed - there'll be no seed this year, who would then give the seed? There would be no paprika in Malawi! Actually, for your information, there's nobody else who sells paprika seed in Malawi, apart from [Company D]. It's a cost! It's a cost! Big, big cost*.'
> Semi-structured interview with two extension field officers from Company D, Malawi, Lilongwe, 2015

Based on the interview data, Company D stated that the final price for 1 kg of dried paprika pods was influenced by the international price, exchange rate, overhead costs and outcomes of negotiation. The pricing formula showing Company D's mechanism to determine the price is expressed as:

$$IP_{MKW/1kg} = (IMP_{\$/1kg}\ x\ ER_{MKW}) - OC_{MKW/1kg} + c \quad (4)$$

$$FP_{MKW1/kg} = IP_{MKW/1kg} + NV_{MKW} \quad (5)$$

$$NV = IP_{MKW/1kg} - SFP_{MKW/1kg} \quad (6)$$

$$FP_{MKW/1kg} = \begin{cases} IP_{MKW/1kg,}\ if\ NV = 0 \\ > IP_{MKW/1kg,}\ if\ NV > 0 \\ < IP_{MKW/1kg,}\ if\ NV < 0 \end{cases} \quad (7)$$

where $IP_{MKW1/kg}$ denotes the initial contract price set by Company D for 1 kg of dried paprika pods expressed in local currency (Malawian Kwacha) before negotiation, $IMP_{\$/1kg}$ is international market price for 1 kg of dried paprika pods expressed in United States (US) dollars (varies throughout the season), ER_{MKW} is the exchange rate (varies on a daily base), $OC_{MKW/1kg}$ are Company D's overhead costs per season per 1 kg of the unit expressed in Malawian Kwacha (might vary from one season to another), c is the price correction (if needed) after the negotiation between Company D and the processor, $FP_{MKW/1kg}$ is the final contract price for 1 kg of paprika expressed in Malawian Kwacha and offered to small-scale farmers, $SFP_{MKW/1kg}$ is small-scale farmers' price expressed in Malawian Kwacha (the amount that small-scale farmers try to negotiate with Company D; $SFP_{MKW/1kg}$ is usually based on the information on price that small-scale farmers receive from vendors or other sources (e.g. farmers' organisation, radio/television programmes, local markets, input dealers or neighbours), and NV_{MKW} is the negotiation value if the price is negotiated with

small-scale farmers (it represents the positive or negative difference between Company D's and small-scale farmers' prices).

Table 10.9 compares the price offered by Company D and three vendors during the 2014/2015 season. Two vendors were able to offer a considerably higher price compared to Company D, while one of the vendors used Company D's price as a benchmark to formulate the price.

Table 10.9 Difference in price offered by Company D and vendors based on the interview data

The price	**Company D** MKW/kg	**Vendor 1** MKW/kg	**Vendor 2** MKW/kg	**Vendor 3** MKW/kg
Grade A	550; can reach 650 (US$ 1.17-1.38)	900-1,000 (US$ 1.91-2.12)	Based on Company D's price, the vendor always offers higher price.	600-1,500 (US$ 1.28-3.12)
Grade B	450 (US$ 0.96)	900-1,000		600-1,500

10.4.3 Estimating Determinants of Side-selling

The binary logit regression model was used to estimate determinants of engaging in side-selling practices. The information on which variables are more likely to increase the likelihood of engagement in side-selling has implications for both Company D and the enabling environment (namely the Government, NGOs and farmers' representatives). By understanding the potential triggers for side-selling, stakeholders have the opportunity to address existing gaps and act to reduce side-selling. The Chi-Square test and test for multicollinearity preceded the regression to explore if predictor variables are correlated to each other.

The Chi-Square test was used between the engagement in side-selling and following categorical variables: district, education, monthly income, food expenses/month, distance to the collection point, CF influence on the livelihood, membership in FUM, and NGO and Government assistance received (Table 10.10). All expected frequencies were greater than five. The Chi-Square test showed there was a statistically significant association between the engagement in side-selling and the stated variables. The association was weak in all cases.

Table 10.10 Chi-Square test for association between engagement in side-selling and set of categorical variables

Variable	Chi-Square (χ^2)	df	*p*-value	Cramer's V
District	20.281**	1	0.000	0.219
Education	6.134*	2	0.047	0.121
Monthly income	16.777**	2	0.000	0.200
Food expenses/month	14.873**	2	0.001	0.188
Distance from the household to the collection point	23.678**	2	0.000	0.237
CF influence on the livelihood	7.784*	3	0.051	0.135
Membership in FUM	15.221**	1	0.000	0.190
NGO assistance received$^{\Delta}$	19.048**	1	0.000	0.211
Government assistance received	15.890**	1	0.000	0.195

Note: $^{\Delta}$NGO assistance received showed to be significant in the Chi-Square test but later in the modelling process was excluded as it was decreasing the strength of the model. Satisfaction with the relationship with the contractor did not show to be significant (see chapter 9, section 9.2.4). * significant at 5%, ** significant at 1%.

Table 10.11 shows the results from the multicollinearity test. There was no strong multicollinearity among variables as the mean VIF was 1.78, all VIF values were below 10, and all tolerance values (1/VIF) were greater than 0.1.

Table 10.11 Test for multicollinearity for variables used in binary logistic regression model (STATA output)

Variable	VIF	1/VIF
District	1.30	0.7707
Primary education	2.90	0.3451
Secondary education	3.03	0.3304
Low monthly income	1.49	0.6727
High monthly income	1.35	0.7383
Low expenses for food/month	1.29	0.7738
High expenses for food/month	1.40	0.7127
Close to the collection point	1.88	0.5323
Large distance to the collection point	1.98	0.5047
Positive CF influence on the livelihood	1.91	0.5238
Negative CF influence on the livelihood	1.91	0.5230
Membership in FUM	1.11	0.9015
Government assistance received	1.09	0.9167
Mean VIF	**1.78**	

Table 10.12 presents the descriptive statistics for predictor variables used in the binary logit regression model. The choice of the set of variables was based on the objective to determine the engagement in side-selling. Although the price is considered as a highly important factor in determining side-selling, it was excluded from the model since all small-scale farmers received the same price under Company D's contract and no variations were recorded.

Table 10.12 Descriptive statistics for variables used in binary logistic regression model

Variable	Side-selling, %		Mean	SD
	Yes	***No***		
Side-selling	36.9	63.1	0.369	0.483
Socio-economic variables				
District	52	48	0.292	0.455
Primary education	35.4	64.6	0.743	0.437
Secondary education	35	65	0.181	0.385
No education	56.3	43.7	0.075	0.264
Low income**	26.4	73.6	0.486	0.500
Medium income	47.6	52.4	0.334	0.472
High income	45.5	54.5	0.179	0.384
Low food expenses	29	71	0.356	0.479
Medium food expenses	35	65	0.415	0.493
High food expenses	51.5	48.5	0.227	0.419
Farm characteristics variables				
Close to the collection point	31.9	68.1	0.439	0.496
Medium distance to the collection point	25.5	74.5	0.213	0.407
Large distance to the collection point	50	50	0.350	0.477
Contract influence variables				
Positive CF influence	35.6	64.4	0.963	0.186
No CF influence	37.5	62.5	0.019	0.137
Negative CF influence	85.7	14.3	0.016	0.128
Institutional support variables				
Membership in FUM	47	53	0.401	0.490
Government assistance	63.4	36.6	0.096	0.294

Note: * In Lilongwe district, 30.7% of small-scale farmers were engaged in side-selling. ** Income variable included both farm and off-farm sources.

Table 10.12 shows that 52% of small-scale farmers in the Nkhotakota district engaged in side-selling, compared to 30.7% of the respondents in the Lilongwe district. About 35% of household heads with primary or secondary education were engaged in side-selling, while 56.3% of small-scale farmers with no education practised side-selling. Households with high food expenses per month (51.5%) were engaged in side-selling more than households with medium (35%) and low food expenses (29%).

Households located at a large distance to the collection point (50%) were side-selling in greater proportions compared to households located at a medium distance (25.5%) and close to the collection point (31.9%). Not surprisingly, a substantial number of households that experienced negative CF influence on their livelihoods were involved in side-selling (85.7%). Finally, 47% of households that were FUM members and 63.4% of households receiving Government assistance practised side-selling in the studied sample.

Table 10.13 shows results of the binary logistic regression on the determinants of side-selling. The Chi-Square value of the model $\chi^2(13, N=403) = 94.16$ was statistically significant at 1%, suggesting that the predictor variables included in the model jointly affect side-selling. The model explained 28.6% (Nagelkerke R^2) and 20.8% (Cox and Snell R^2) of the variance in engagement in side-selling, and it correctly classified 73% of cases.

Table 10.13 indicates that out of 13 predictor variables, the coefficients of eight variables were statistically significant. The district, secondary education, large distance to the collection point, membership in FUM and Government assistance received were statistically significant at 1%. The primary education, low monthly income and negative CF influence on the livelihood were statistically significant at 5%.

The strongest positive and significant predictor variable of engagement in side-selling was the negative CF influence on household livelihood with the odds ratio of 20.77, implying that households who reported negative CF influence on their

livelihood were over 20 times more likely to engage in side-selling compared to households reporting that CF had no influence on their livelihood.

Table 10.13 Results from binary logistic regression estimating determinants of side-selling

Variables	Coefficient	S.E.	Wald	*p*-value	Odds Ratio
District	0.838**	0.280	8.957	0.003	2.311
Socio-economic variables					
Primary education	-0.924*	0.419	4.871	0.027	0.397
Secondary education	-1.322**	0.496	7.117	0.008	0.267
Low monthly income	-0.609*	0.276	4.850	0.028	0.544
High monthly income	-0.156	0.344	0.205	0.650	0.856
Food security variables					
Low expenses for food/month	-0.383	0.279	1.892	0.169	0.682
High expenses for food/month	0.145	0.319	0.206	0.650	1.156
Household farm characteristics variables					
Close to the collection point	0.331	0.335	0.975	0.323	1.392
Large distance to the collection point	0.954**	0.354	7.259	0.007	2.596
Contract influence variables					
Positive CF influence on the livelihood	0.104	0.808	0.017	0.897	1.110
Negative CF influence on the livelihood	3.034*	1.391	4.757	0.029	20.776
Institutional support variables					
Membership in FUM	0.707**	0.248	8.113	0.004	2.027
Government assistance received	1.660**	0.413	16.171	0.000	5.261
Constant	-0.627	0.978	0.412	0.521	0.534
Diagnostic statistics					
$\chi_{(13)}^2$ (df)	94.16**				
Nagelkerke R^2	0.286				
Cox and Snell R^2	0.208				
Sig.	0.001				
% of cases predicted correctly	73%				
Observation (N)	403				

Note: * significant at 5%, ** significant at 1%.

Concerning the socio-economic variables, both primary and secondary education and low monthly income showed significant negative effects on engagement in side-selling. Households with an educated household head were less likely to practice side-selling compared to households led by an uneducated head.

It was expected that low-income households would have higher probability to engage in side-selling. However, households with low monthly income were less likely to side-sell compared to households with medium monthly income. Food security variables showed to be non-significant in determining farmers' engagement in side-selling. This result implies that food expenses did not influence farmers' decision to side-sell paprika. Households located at larger distance from the collection point were more likely to side-sell compared to households at the medium distance. Households in the Nkhotakota district were two times more likely to engage in side-selling than households in the Lilongwe district (odds ratio of 2.31). The Lilongwe district is considerably closer to Company D's headquarters.

Both institutional support variables (membership in FUM and Government assistance) displayed a significant and positive effect on side-selling. Members of FUM were two times more likely to engage in side-selling than non-members (odds ratio of 2.02). Households who received Government assistance were over five times more likely to side-sell paprika compared to households that did not receive Government assistance (odds ratio of 5.26). The results indicated that the following variables had expected sign (see chapter 7, section 7.6.3.2 on estimating determinants of side-selling): district, primary and secondary education, low income, food expenses/month, large distance, negative CF influence and Government assistance received.

10.5 Discussion

The key challenges in Malawi's paprika supply chain identified in this study were the result of three meta-challenges including poor input provision due to low trust, lack of participation in contract design and perceived low contract price. The results suggested that all stakeholders had their share in 'creating and maintaining' stated challenges. Company D experienced the problem of side-selling, which was related to poor contract design. The contract offered to small-scale farmers did not clearly define all the necessary clauses and Company D withheld the right to decide on the price without first negotiating with contracted farmers. The poor design was allowed since the country and its institutional elements were missing a guiding policy that would organise relations between the parties. Finally, small-scale farmers were not

satisfied with some terms in the contract, and because they could not influence any changes, they turned to alternative outlets.

10.5.1 Provisions and Power Balance in Contracting

Contract farming in the paprika supply chain in Malawi was challenging for both Company D and small-scale farmers. Each party adopted strategies to overcome shortcomings of the contractual arrangement. Different strategies had diverse results on the overall efficiency and sustainability of the contract farming relationship.

According to the literature, one of the main functions of the contract is to mitigate imperfections on the input and output markets, and to secure a regular supply of the produce (da Silva, 2005). In this study, the input provision was not sufficient for small-scale farmers' needs. It is likely that since the contract did not provide inputs other than seeds, small-scale farmers were not able to obtain required inputs elsewhere for their production. The contract offered output market; however, small-scale farmers produced low volumes of paprika. For a contract arrangement, it is important to provide the opportunity for growth, especially related to yields. If small-scale farmers did not receive incentives to increase the yields and generate higher incomes based on more volumes produced, it is possible that the contract farming arrangements will remain only the short-term solution for the majority of small-scale farmers.

On the other hand, Company D was not able to purchase planned volumes of the crop from small-scale farmers. In this situation, Company D might consider terminating the contracting relationship with small-scale farmers, and turn to supplying the crop from a few medium-sized farmers. Although contract farming is not limited to small-scale farmers, the literature shows that small-scale farmers have particular advantages when it comes to contracting, such as the access to abundant family labour, lower supervision costs, and intensive use of land (Hazell *et al.*, 2007; Key and Runsten, 1999; Singh, 2011; Wiggins *et al.*, 2010). Nonetheless, since Company D failed to obtain planned quantities, the contracted crop might be supplemented by additional sources, which would increase Company D’s overall costs and decrease the efficiency of the contracting agreement. As both small-scale farmers and Company D encountered difficulties in benefiting from the contractual

arrangement, and had to search for additional provisions outside of the contract, the future of the contract relationship in the studied case may be considered as precarious rather than sustainable. This forecast is based on the assumption that both parties will engage in contracting if the expected advantages and gains exceed those of an alternative (Barrett *et al.*, 2012; Birthal, 2008; da Silva, 2005; Minot, 2011).

Another important point of the contractual relationship is the power balance. In this study, small-scale farmers had limited bargaining opportunities and did not participate in contract design. In contrast, Company D determined both the price and grading system concerning the contracted crop. Despite the unequal power distribution, results suggested that small-scale farmers shifted part of the power on their side by retaining the right to sell the crop to the most preferred party. Even though the signing of the contract in the majority of cases involves contractors' exclusive right to be the first buyer of the produce, small-scale farmers may ignore this principle due to alternative channels offered, and as a response to limitations inside the contract relationship. The enforcement of the contracts in developing countries is slow (Narayanan, 2012), which is likely to encourage small-scale farmers in their side-selling practices.

Considering that Company D was drafting the contract in the study, the possibility to manipulate the price and grade levels to maximise Company D's profits was high. Nevertheless, in contract farming arrangements, the contractor represents the extended link to the market and adjusts the contract to correspond to external conditions, taking into account internal circumstances. Due to information provided by the informal markets, small-scale farmers are often aware of the market price and grading system. Company D's opportunity to manipulate and achieve excessive profits is mainly limited. This finding is confirmed in the study by Agar and Chiligo (2008) who found that farmers in Malawi believed that companies were paying low prices and exploited farmers' weaker position. The evidence showed that companies did not pay a substantially lower price compared to other buyers, although companies incurred significant costs while providing inputs and extension services to farmers (Agar and Chiligo, 2008).

Vavra (2009) and Poulton *et al.* (2010) argued that farmers' bargaining power is weakened if companies act as a monopsonistic player and unequal market power could push farmers to accept unfavourable terms in the contract. This study shows that other factors have to be considered when discussing the power balance in contract farming, for example, the existence of informal channels. One such informal channel is discussed below.

10.5.2 The Role of Vendors in Contractual Relationship

In the study, the vendors represented an alternative sale channel to small-scale farmers. Vendors were able to fill particular gaps in the relationship between Company D and small-scale farmers, namely the lack of trust and bargaining power, the nontransparent grading system, and the low price. It is likely that stated trust between vendors and small-scale farmers existed only as a response to low trust levels in the initial relationship between Company D and small-scale farmers, and due to perceived higher prices offered by vendors. Since vendors attracted small-scale farmers exclusively with premium prices, it is possible that in the case when Company D exited the market and withdrew the seed supply, vendors would incur additional costs for providing inputs to small-scale farmers. In this situation, vendors would not have Company D's prices as the benchmark anymore, and it is less likely that vendors would be able to secure a price above the market level for small-scale farmers. The trust between vendors and small-scale farmers might perish.

Additionally, small-scale farmers and vendors negotiated on the price. Here, vendors gained an advantage over Company D, as vendors did not depend on international prices and buyers' requirements but rather on transport and packaging costs mainly. It was possible for vendors to engage in price negotiation with small-scale farmers. Nevertheless, just by offering a higher price than Company D, it is likely that vendors did not experience many counter offers from small-scale farmers.

Regarding the grading system, vendors used fewer grades than Company D, which small-scale farmers perceived as more fair practice. The grading process relates primarily to the final product; hence grading is dependent on the further market. It is possible that vendors used less strict characteristics of their further market to present the grading system as more compelling to small-scale farmers. If, for example,

vendors sell the crop further to processors within the country, it is less likely that the grading criteria will require more than two basic grades. By focusing on the local market, vendors were able to offer simpler and more transparent grading system, compared to Company D that exported the crop and had to comply with international grading rules.

The vendor's role in the contractual relationship has not yet been thoroughly discussed in the existing literature, although some studies mentioned side-selling practices in contract farming schemes (for example, Bingen *et al.*, 2003; Minten *et al.*, 2009; Gallacher, 2013; Goel, 2013; Mujawamariya *et al.*, 2013). The overall idea about vendors in this study was that of a parallel informal sector, which used the existence of formal market channels - Company D. The vendors relied on Company D regarding inputs and training provided to small-scale farmers, as vendors themselves did not secure such services. Since vendors did not participate in cost sharing, they were able to offer a premium price to small-scale farmers.

Company D lost considerable quantities of the crop due to vendors' operations. Company D was left with an option to terminate contracts with small-scale farmers without being compensated for the damage as contracts in Malawi were challenging to enforce. The presence of vendors created unofficial competition between Company D and vendors' prices. It is likely that vendors competed among themselves regarding prices, too. Small-scale farmers obtained short-term gain from higher prices offered by vendors, at the risk of losing trust and longer-term benefits from the contract. Nevertheless, vendors represented a relatively secure outlet for the small-scale farmers' crop with higher prices offered, and removed Company D's monopsonistic power over the paprika market. Without vendors, and when Company D is the major buyer of paprika in the area, it is likely that small-scale farmers would comply more with contract terms and sell most of the produced crop to Company D.

10.5.3 Efficiency and Sustainability of Contract Farming

The vendors may have a role in contract farming, not as a party or associate to the contract, but acting as one of the criteria to determine the efficiency of contracting. The higher the overall efficiency of a particular contract arrangement, the lower should be the amount of side-selling. Nonetheless, vendors' presence in the supply

chains is significant in the bigger picture, especially if Company D's backwards integration strategy shows to be cost-ineffective and lacking reliable supply. In this situation, Company D is likely to rely on an additional supply of the produce coming from the vendors.

The studied contract farming arrangement suggested that strategies, which parties adopted to protect themselves from the contract's shortcomings, potentially undermined the contract's efficiency and sustainability. On Company D's side, strategies included reluctance to allow better input provision and negotiation of contract features, including the price. On the small-scale farmers' side, side-selling was the response to the lack of participation in the contract and the way to secure higher incomes. The findings raised the question whether the contract met its purpose as an institutional arrangement to enable efficient input provision and product supply. The low level of trust recorded between Company D and small-scale farmers was found to represent a considerable obstacle in building the sustainable relationship through the contract.

The main findings from this part of the study correspond to the findings of several similar studies. For example, Kirsten and Sartorius (2002) and Singh (2002) examined the new role of contract farming in the globalised agricultural markets. Kirsten and Sartorius (2002) argued that one of the major challenges of modern contract farming involves establishing the institutional arrangements, which will enable small-scale farmers to benefit from the globalised markets. This study expands on the stated point by suggesting increasing the trust and understanding between the parties, and consequently involving negotiation practice to ensure an equal benefits distribution in the relationship. Singh (2002) found that in Indian Punjab, the local firm was able to connect with the producers more efficiently due to the local language and identity, compared to the multinational companies. The local firm was operating on a smaller scale and was only able to provide the higher prices, excluding other services (Singh, 2002). This is similar to the role of the local vendors described in this study.

Additionally, Will (2013) highlighted the importance of traditional channels that exist beside the official contractual relationship and stated that the success of such

channels is a result of home-grown networking, and traditional ways of communicating and coordinating operations. This confirms the study's finding on the relatively close relationship between the vendors and small-scale farmers. Although Will (2013) suggested that the way the traditional channels are functioning could serve as the example for designing contract farming schemes, this study argued that the vendors operate in a way that undermines Company D's efforts and disturbs the relations in the supply chain. Nonetheless, Company D might adopt a more traditional way of doing business to increase trust and understanding among small-scale farmers.

The recent study from Fréguin-Gresh *et al.* (2012) in South Africa discussed whether contract farming ensures opportunities for small-scale farmers. The authors argued that contracts did not reduce poverty and did not represent an institutional tool for improving livelihoods of the rural people; thus, contracting should not be considered as a panacea for small-scale farmers (Fréguin-Gresh *et al.*, 2012). Notwithstanding that contracting cannot resolve all the market imperfections, poverty, and exclusion problems at once for all small-scale farmers, this study suggested improvement of contract farming by redefining the understanding of what the contracts represent and might provide for the parties involved. The study proposed that the contract may be seen as a growing legal relationship between Company D and small-scale farmers. Also, the contract should be structured to adjust to the increasing needs of the agri-food sector, and an aim to reach and respect a transparent and fair consensus on production and marketing procedures involved.

The *growing legal relationships* imply that contracts should be perceived as legally binding but open to amendments and improvements coming from both sides. The *capacity to adjust to the increasing needs of the agri-food sector* extends to the latter and emphasises the critical role of contracts in responding to food demand by using efficient supply chain management. Having *the aim to reach and respect a transparent and fair consensus on production and marketing procedures involved* places contract farming forward in promoting the sustainable inclusion of small-scale farmers into markets. A fresh view on contract farming is challenging to achieve due to both previous experiences and considerable heterogeneity of existing contracting arrangements. Yet, the importance of thoroughly revisited and re-established

contracting principles in food supply chains in developing countries cannot be overemphasised, as the Legal Guide (2015) suggested.

10.5.4 Contractual Completeness

The Malawian contract included in total eleven defined clauses and one partially defined clause. Defined clauses described contract background, production and delivery characteristics, money transfer, and undesired acts. The price clause was partially defined. The contract did not include clauses concerning marketing process (grades), legal aspects (applicable law and dispute settlement), exit options, and unpredictable events. Since a certain degree of incompleteness is inevitable in almost all the contracts (Vavra, 2009), the Malawian example was no exception. Nevertheless, omitting some clauses in the contract is justified when excluded clauses do not introduce additional risks or inequalities for parties involved.

Defining the price of paprika in the studied contract involved some challenges. As an export commodity, paprika depends on international prices and currency fluctuations. The comparison of two contracts from Malawi showed that the current contract dismissed precise price definition, a practice observed in the past contract. In legal terms, apart from identifying parties and objectives of the agreement, the general contract law does not impose any requirements regarding contract form (Legal Guide, 2015). One may infer that contracts do not necessarily need to include the price clause. Still, in the Malawian contract, Company D retained the right to decide solely on the price considering market conditions. By doing so, Company D may have reduced its marketing risk and increased small-scale farmers' vulnerability to fluctuations on the international market. Relating the issue back to the quantities expected from small-scale farmers, the Malawian contract required the entire crop to be sold to Company D at market price corrected for currency fluctuations. The contract provided a secure outlet for small-scale farmers' produce but did not offer a stable or premium price. The contract did not involve the possibility to bargain over the price. According to the existing price clause, small-scale farmers signing the Malawian contract accepted the risk that volatile international prices often shape the final price paid by Company D.

From clauses that this study characterised as missing in the Malawian contract, it can

be argued that omitting grades affected the contract fairness to the least extent. International traders in the paprika sector tend to follow existing guidelines describing grade levels and grades for paprika do not change as often as the price. For example, instructions for determining grades from the American Spice Trade Association (ASTA) are widely accepted international guidelines for export spices. The guidelines specify industry standards for spice quality and are mainly known for ASTA colour values (ASTA, 2016). Defining grade levels based on visual assessment may involve a degree of subjectivity, which is further related to the perishable nature of agricultural produce. Even though the contractor is usually familiar with ASTA specifications, small-scale farmers may lack access to essential information concerning grade levels. In this regard, the Malawian contract included training on grading for small-scale farmers and reduced the information asymmetry between the parties. Nevertheless, the mentioned subjectivity in the grading process left grounds for potential manipulation on both sides.

The Malawian contract did not define applicable law governing the contract. It is unclear which jurisdiction applied when interpreting and enforcing the contract. The contract did not describe procedures for dispute settlement, so it was not possible to determine parties' rights and responsibilities if disagreements arose. Considering the financial and information capacities of the two parties, Company D is likely to have the advantage in directing dispute settlements by influencing either arbitration or mediation. Due to the costs involved in pressing charges against Company D, small-scale farmers may be reluctant to pursue legal claims. Since the contract remained silent on applicable law and disputes clauses, the more powerful party gained the opportunity to determine the rules *ad hoc*.

A clause on termination was not included in the Malawian contract. The Malawian contract described acts that classify as a breach, without implying immediate termination as a consequence of the breach. On the other hand, the Malawian contract did not specify conditions for terminating the agreement by either party's free will. Therefore, if any party intended to exit the contract in an amicable way, the contract did not define required procedures, such as prior notice and remaining liabilities.

Since the contract omitted the termination clause, it remained each party's interpretation whether the contract locked-in the parties or gave the right to exit the contract arbitrarily. A similar case applied to *force majeure* events. The contract did not foresee natural disasters, which can result in delays in the delivery, reduced quality or complete destruction of the crop. It was unclear how the costs of suffered damage would be distributed between the parties. The Malawian contract introduced the risk of raising disputes if natural disasters occur since each party might try to claim indemnity rights. Possible disputes could not be easily settled due to the lack of dispute settlement and applicable law clauses in the Malawian contract.

There are certain difficulties in formulating the relationship between two independent parties engaged in agricultural production and marketing. While the current contract for paprika in Malawi was found complete for the majority of included clauses, the specific clauses that were not part of the contract considerably influenced parties' risk and power balance. The inequality between the parties was introduced by omitting a dispute settlement clause. The market risk was increased for small-scale farmers, as the price clause was partially defined. The contract was vague in particular aspects due to its silence on applicable law, termination, and *force majeure* clauses; hence, the less informed party was exposed to risks of arbitrary law interpretation and manipulation. The contract was written in English, and although the official language in Malawi is English, the majority of the Malawian small-scale farmers speak the national language Chichewa. The clauses of the contracts are especially sensitive to the word order. Any differences in two languages might cause misunderstanding and add to the vagueness.

The study's findings correspond to conclusions from two recent studies. Prowse (2012) argued that companies often fail to incorporate even basic information in the contract, leaving farmers without an accurate idea of what they signed. The author pointed out that farmers are rarely aware of the fact that, by signing the contract, they might be giving their rights over the crop to the company (Prowse, 2012). Pultrone (2012) analysed elements of typical agricultural contracts and concluded that complete contracts might contribute to the correct execution of parties' obligations and avert misunderstandings. In particular, the presence of price, quantity

and quality, force majeure, termination and dispute settlement clauses adds to a contract's clarity and certainty (Pultrone, 2012).

10.5.5 Side-selling in the Paprika Supply Chain

Since the main reason for side-selling on the farmers' part was the argument that other buyers offered a higher price, there are two points to reflect on. First, contracted small-scale farmers mostly had low incomes, meaning they were at times struggling to secure decent livelihoods for their households. Gaining a higher price for the same volume might seem as economically justified and even necessary due to limited opportunities available for income generation. This is in accordance with Mujawamariya *et al*. (2013) and especially Goel (2013) who described the case of PepsiCo in India where contracted farmers, supported by government regulations, were offered to choose whether they wanted to sell their rice to the contractor or to Company D offering a higher price.

Second, vendors offered a higher price to small-scale farmers since vendors did not share production and marketing costs with farmers. Company D established the price in the contract mostly without previous consultation with small-scale farmers. Company D did not take into consideration farmers' production costs, which aggravated the pricing issue. Minten *et al.* (2009) argued that, in cases where Company D sets the price above the local market price, the occurrence of side-selling is likely to reduce, which supports the argument that the main reason for side-selling is the price offered. In the Malawian contract, the price was partially determined on the international market and Company D had limited influence because the crop was intended for the export market. Due to the absence of an official local market for dried paprika, Company D was the first one to announce the price and then encountered the competition from the vendors. One of the ways to avoid side-selling in the described situation is to negotiate the price with small-scale farmers.

Still, there is no guarantee that the negotiated price would reduce side-selling as vendors pointed out that they will always add to the price that Company D offers. This finding challenges the argument from Boulay (2013, p. 212) who suggested that the competition between buyers '*is probably important in enhancing the fairness of*

CF schemes because the increasing rivalry for raw materials among buyers has been an incentive for companies to enhance their efforts to promote and improve their services to contract [...] growers'. In the Malawian example, the competition between Company D and vendors had quite a different outcome: Company D reduced the input provision to the minimum (the contract provided only the seed for immediate cash) to protect its investments and reduce the losses in the case of side-selling.

This study found that Company D might have lost up to 44.6% of its planned paprika supply. Bingen *et al.* (2003), in a similar study, concluded that, in the case of side-selling, contracting companies face a double problem: poor loan repayment and the inability to meet market targets. Lost profits for Company D might not appear high, but that amount could have been used, for instance, for investing into better extension services by hiring additional staff, renting another vehicle or appointing an expert to provide training on legal aspects of CF for small-scale farmers. This example is used to illustrate that side-selling weakens not only Company D but limits its services to small-scale farmers; thus, in the end, side-selling poses a threat to small-scale farmers.

Households reporting that CF had a negative influence on their livelihood were more likely to side-sell compared to households that experienced no influence of CF on the livelihood. There are not many solutions for this issue except to either terminate contracts with unsatisfied farmers or improve communication to better understand why contracting did not result in a positive outcome for small-scale farmers.

The study showed that education had a negative significant impact on engagement in side-selling. It is suggested that educated household heads can better understand contract terms and conditions as well as the legal consequences of the contract breach and that education will lessen the possibility of side-selling. This result corroborates with the studies from Gallacher (2013), Mwambi *et al.* (2016) and Kumar *et al.* (2016) who found that education promotes farmers' participation in contract farming.

Furthermore, low-income households were less likely to practice side-selling in comparison to medium-income households. The explanation is that low-income households were less prone to risk their relationship with the contractor as the contract is one of their scarce regular sources of income. A similar observation was made by Wainaina *et al.* (2012) indicating that the rise in farm income increased the likelihood of farmers' participation in CF. Since one of the main motives to join CF is income, the study's findings suggest that a farmer's initial pursuit of stable income sources might evolve over time into a strategy for higher income generation, and this is where the vendors play a role. Indeed, Table 10.3 showed that medium- and high-income households were side-selling their paprika to a greater extent than low-income households.

The results from the binary regression suggest that distance has a positive effect on side-selling, so more remote households are more likely to side-sell their crop since they might incur higher transaction costs of delivering paprika to the assigned collection point (e.g. increased costs for hiring transport and fuel). These findings are consistent with previous studies (Miyata *et al.*, 2009; Wainaina *et al.*, 2012) showing ithat distance had a negative impact on farmers' participation in CF.

Small-scale farmers who were members of FUM and received assistance from the Government were more likely to side-sell than non-members and those who did not receive assistance. This finding is in contrast with the assumption that the participation in farmers' organisation will decrease members' opportunism, as proposed by Swinnen *et al.* (2007). Bellemare (2012) and Kariuki and Loy (2016) found that membership in a cooperative had a positive impact on participation in CF. However, Mujawamariya *et al.* (2013) warned that vendors are often able to offer better payment conditions than farmers' organisations, which attracts farmers. An explanation of the positive effect of FUM on side-selling might be in the potential to obtain needed inputs at a reduced price through FUM. Cheaper inputs may result in more crop produced and more income gained by selling larger quantities of paprika to vendors. In addition, while Government support might positively impact farmers' participation in CF, as found by Guo (2005), the study findings indicate that Government assistance (in production practices) did not consequently increase

small-scale farmers' awareness of importance to find and retain a secure market outlet by, for instance, complying with the contract.

10.6 Summary

This chapter identified the key challenges in the paprika supply chain. In the first sub-section, the study found that the key challenges involved poor input provision due to low trust, lack of farmers' participation in the contract design and the price was perceived as low compared to what other sources offered. The second sub-section concluded that Company D has to make improvements in the design as the current contract was missing the following clauses: delivery conditions, grades, termination, disputes, *force majeure* and applicable law. The price clause was only partially defined. The third section focused on the issue of side-selling and suggested that Company D might be losing between 19.9% and 44.6% of volumes due to this opportunistic behaviour. Chapter 11 elaborates on options for overcoming the stated challenges.

Chapter 11 Options for Improving Contracting Conditions for Small-scale Farmers in Malawi

11.1 Introduction

Chapter 11 provides the analysis and interpretation of the collected qualitative data with an aim to propose and critically evaluate options for improving contracting conditions, in particular for small-scale farmers (*Objective 4*). This chapter answers these related research sub-questions*: What changes or new practices need to be adopted for improved contracting conditions? How can the identified options for improving contracting conditions be implemented in the Malawian paprika supply chain? Which actors need to implement the identified options?*

This part of the study was in particular inspired by the work from Nijhoff and Trienekens (2010) who identified main challenges in contract farming arrangements in Ethiopia and then asked the key stakeholders to rank challenges according to their priority. The authors explored who should address the identified challenges (Nijhoff and Trienekens, 2010). This approach was adopted and adjusted in this study (see this chapter under section 11.3).

11.2 Ranking the Key Challenges According to Priority

The key challenges (chapter 10) identified through the qualitative thematic analysis required further verification and the establishment of a hierarchy from the stakeholders' viewpoints, so recommendations on how to efficiently address those challenges could be developed. The main findings were disseminated to allow participants to scrutinise them and establish priorities among identified challenges (see Appendix 7). Table 11.1 displays the results from the ranking exercise performed with small-scale farmers, Company D, the Government and representatives from the farmers' association, research units, and international development and aid organisations.[119]

[119] Stakeholders agreed with the identified challenges (see chapter 10, Figure 10.1) as the ones that represent the key issues in the paprika supply chain. Small-scale farmers expanded on the proposed challenges and added problems resulting as consequences of climate change. However, these were not included as the topic of climate change, although crucial, is beyond the scope of this study.

Table 11.1 Ranking of challenges according to priority: Small-scale farmers, key stakeholders and Government representatives

Rank	Small-scale farmers in Nkhotakota	Small-scale farmers in Lilongwe	Company D	Key stakeholders (without Company D)	Government representatives
1	Poor input provision	Poor input provision	Side-selling	Contract design	Contract design
2	Low price	Misunderstanding of contracting principles	Small quantities sold to the contractor	Low level of trust	Low level of trust
3	Volatile market conditions	Volatile market conditions	Volatile market conditions	Non-transparent grading system	Negative previous experience
4	Side-selling	No bargaining	Low price	No bargaining	Volatile market conditions
5	No bargaining	Non-transparent grading system	Negative previous experience	Low price	Low price
6	Low level of trust	Low price	Low level of trust	Negative previous experience + Misunderstanding of contracting principles	Misunderstanding of contracting principles
7	Contract design	Side-selling	Poor input provision	Poor input provision	Small quantities sold to the contractor
8	Misunderstanding of contracting principles	Low level of trust	Contract design	Small quantities sold to the contractor	Poor input provision
9	Non-transparent grading system	Small quantities sold to the contractor	Misunderstanding of contracting principles	Volatile market conditions	No bargaining
10	Small quantities sold to the contractor	Contract design	No bargaining	Side-selling	Side-selling
11	Negative previous experience	Negative previous experience	Non-transparent grading system		Non-transparent grading system

Table 11.1 shows that, in both districts, small-scale farmers considered poor input provision as the primary challenge in contract farming relations. In contrast, Company D listed side-selling as the major issue. Key stakeholders and Government representatives were synchronised in their ranking of the most important challenge: the contract design.

Volatile market conditions represented one of the important challenges for small-scale farmers, Company D and the Government. Concerning less important challenges, both key stakeholders and Government rated side-selling as one of the least significant issues. The non-transparent grading system was not deemed as a priority for Company D and the Government. Finally, small-scale farmers in both districts stated that the previous negative experience does not represent a principal challenge in the paprika supply chain.

Table 11.2 indicated a certain degree of discordance among respondents regarding the priority of identified challenges. Kendall's W test was run to assess whether there exists an agreement among respondents in ranking the challenges.

Table 11.2 Results from Kendall's W Test: Overall rank for challenges

Rank	Challenge
1	**Contract design**
2	**Low level of trust**
3	**Low price**
4	No bargaining
5	Volatile market conditions
6	Poor input provision
7	Non-transparent grading system
8	Misunderstanding of contracting principles
9	Negative previous experience
10	Side-selling
11	Small quantities sold to the contractor

The respondents were presented with the key challenges and asked to rank them according to priority using the scale 1-11, where 1 denoted the most urgent challenge and 11 denoted the least urgent challenge. Table 11.2 displays results from Kendall's

W test in the form of an overall ranking, which is based on mean rank values indicated in Table 11.3.

According to Tables 11.2 and 11.3, contract design was considered as the priority among all identified challenges (the lowest mean rank). Low levels of trust and low price in the contract were shown to be among the most important challenges in Malawi's paprika supply chain. Small quantities sold to the contractor were the least worrying issues for respondents.[120]

Table 11.3 further confirmed that there was no statistically significant agreement among respondents (N=10, W=0.112, p=0.342).

Table 11.3 Results from Kendall's W test for agreement among raters

Ranked Challenges	Mean Rank
Negative previous experience	7.00
Volatile market conditions	6.00
Low level of trust	4.80
Contract design	3.80
Poor input provision	6.10
Non-transparent grading system	6.40
No bargaining	5.90
Low price	4.90
Small quantities sold to the contractor	7.40
Misunderstanding of contracting principles	6.50
Side-selling	7.20

Test Statistics	
N	10
Kendall's W[a]	0.112
Chi-Square	11.200
df	10
Asymp. Sig.	0.342

Note: the direction of the rank was from 1 (most urgent challenge) to 11 (least urgent challenge).

[120] Despite the fact that the overall ranking showed such a result, small quantities were a substantial problem for Company D (Table 11.1).

The analysis then continued with testing whether there exists a statistically significant agreement among the particular group of respondents. For instance, Table 11.1 showed that small-scale farmers perceived different challenges as more important compared to other stakeholders. Kendall's W test was run to assess whether the statistical significance increases if small-scale farmers are excluded since their rating was different to the rating of other key stakeholders.

Table 1.8A in Appendix B indicates the results from Kendall's W test in which only ranks from stakeholders were considered. There was a statistically significant agreement among stakeholders regarding the priority of identified challenges (N=7, W=0.319, p=0.014). Results showed that the agreement was statistically significant. Even when Company D was excluded from the test, that significance was lower (N=6, W=0.327, p=0.033) (Table 1.9A in Appendix B). This result suggested that stakeholders among themselves had more similar opinions on the challenges as opposed to when the assessment included small-scale farmers' views too.

11.3 Options for Improving Contracting Conditions: What? How? Who?

Since the ranking of challenges showed disagreement among respondents in general, it was further expected that different groups (i.e. small-scale farmers opposed to other stakeholders) would have different ideas on:

- *What needs to be done to improve contracting in Malawi?*
- *How to do it? What practices/procedures need to be adopted?*
- *Who should do it? Which actors are needed to implement improvements?*

The questions above represent a guiding model (see Appendix 3 and 4) used during the final visit to Malawi to direct the discussion towards finding options for improving contracting conditions. The guiding model was applied to every challenge with an ultimate goal to facilitate participatory and local problem solving and to answer the study's overall question. This section combines results from the focus group discussions and interviews in the form of final 'Models'.

11.3.1 The Small-scale Farmers' Model

Small-scale farmers developed the Small-scale Farmers' Model during focus group interviews in the Nkhotakota and Lilongwe districts (Table 11.4).

Table 11.4 The Small-scale Farmers' Model

What needs to be done?	How can it be done?	Who should do it?
• *Improve input provision*	• Providing loans to farmers' associations • Providing sufficient seeds, fertilisers and chemicals to farmers' associations in time • Establishing revolving funds	• Company D • Farmers' associations or unions
• *Improve pricing*	• Improving dialogue between Company D and small-scale farmers • Clearly defining the price in the contract • Ensuring minimum guaranteed price in the contract • Calculating costs of living and then formulating the price	• Company D • Small-scale farmers
• *Improve understanding of contract principle*	• Allowing small-scale farmers to be present, discuss and agree on the contract design • Honouring what was promised from both sides • Establishing and maintaining communication between parties • Providing accurate information	• Company D • Small-scale farmers
• *Decrease market volatility*	• Encouraging/allowing other buyers to enter the paprika market • Assuring farmers that their crop will be purchased	• Company D • Other buyers
• *Eliminate side-selling*	• Paying in cash immediately after the purchase of paprika • Mutually agreeing on the price • Encouraging association or group members to sell to the contractor • Organising selling through farmers' association and not individually • Enabling clubs to have revolving funds that can be used if farmers want to sell smaller quantities and then accumulated quantities can be sold to Company D	• Company D • Small-scale farmers • Farmers' associations or unions
• *Increase participation of small-scale farmers in contract formulation*	• Encouraging/allowing other buyers to enter paprika market (it is hoped that Company D will allow bargaining in order not to lose its supplying base) • Increasing Company D's presence in the local area (not just during the marketing days)	• Company D • Other buyers

Table 11.4 The Small-scale Farmers' Model - *Continued*

What needs to be done?	How can it be done?	Who should do it?
• *Increase knowledge on grading system*	• Educating farmers on grading rules and procedures	• Company D
• *Increase trust levels*	• Honouring what was promised from both sides (especially regarding the price) • Ensuring minimum guaranteed price in the contract • Encouraging association or group members to sell to the contractor	• Company D • Small-scale farmers
• *Advance the contract design*	• Providing complete contract, especially with defined clauses on the price, what to do in the case of breach and dispute mechanism • Appointing mediators and/or arbitrators (member of association) who can direct farmers in legal matter	• Government • Mediator/arbitrator • Farmers' associations or unions
• *Increase traded volumes*	• Early purchase by Company D • Mutually agreeing on the price • Establishing and maintaining communication between parties	• Company D • Small-scale farmers
• *Improve infrastructure*	• Investing in warehouse and irrigation system (water tanks and dams)	• Company D

The Model suggests addressing challenges according to the priority small-scale farmers assigned to them (see Table 11.1). Therefore, the primary concern in this Model was the improvement of input provision. Small-scale farmers stated this could be done by providing loans to farmers' associations (not individuals) and securing sufficient volumes of inputs in time. Small-scale farmers suggested the establishment of so-called revolving funds where small-scale farmers would invest a percentage from their sale after the marketing season so that the club/association can purchase required inputs for their members at a reduced rate. The responsibility to improve input provision was on Company D's side (offering loans), while associations/unions should be accountable for revolving funds.

Small-scale farmers recommended that the price could be improved by enhancing the dialogue between Company D and farmers and the responsibility for doing so lies with both sides. In the small-scale farmers' view, Company D would improve pricing by clearly defining the price in the contract, ensuring a minimum guaranteed

price and considering costs of living while formulating the contract price. This would also increase trust levels towards Company D.

Similarly, small-scale farmers believed that the understanding of contracting principles and trust could be improved if both sides honoured their obligations and regular communication was maintained. Company D's responsibility was to allow small-scale farmers to negotiate on the contract design and provide accurate information so that misinterpretation of the contract would be reduced.

For decreasing market volatility, small-scale farmers stated that Company D should guarantee the purchase of paprika at all times and that other buyers should be allowed to enter the market. The latter was believed to have the potential to motivate Company D to include small-scale farmers more actively in contract formulation in order not to lose its supplying base over competing buyers.

Small-scale farmers suggested approaching the challenge of side-selling from two sides. First, Company D would decrease side-selling by paying the cash immediately after purchasing paprika (see chapter 10, Table 10.8 on the key reason for side-selling) and by allowing small-scale farmers to negotiate on the price. If Company D purchased paprika directly from associations and not individually, the trust and confidence levels would increase while the side-selling practice could be reduced due to peer-pressure present in associations. Second, small-scale farmers recognised that they are part of the solution, too. Hence, farmers proposed again to form revolving funds at the association level with an option to purchase and accumulate smaller quantities of paprika from small-scale farmers and then sell larger volumes to Company D. In this way, small-scale farmers would be able to deliver smaller volumes but on a regular basis, while Company D would only collect accumulated volumes and decrease its transaction costs. This option was proposed as many small-scale farmers sell small volumes to vendors due to a great need for quick money and because vendors are 'always around'. However, if the association in the local community would have the option to buy those small volumes, small-scale farmers believed this would help them to stay away from side-selling. To increase traded volumes, small-scale farmers stated that better communication, allowing negotiation on the price and early purchase could result in more volumes for Company D.

Small-scale farmers suggested that Company D should increase farmers' participation in contract formulation by being present more often on the ground locally. By doing so, Company D could devote more time to educate small-scale farmers on grades and international procedures that apply while grading paprika. This practice would eliminate the impression of non-transparency of Company D's grading system that existed among small-scale farmers and improve relationships overall.

Small-scale farmers assigned some role to the Government only in addressing the challenge of poor contract design. Small-scale farmers stated that the Government should initiate forming complete contracts, which would contain clauses on price, contract breach and dispute mechanism. Apart from the Government, associations should have the task to advance the contract design by educating and appointing its members to serve as mediators or arbitrators and direct farmers in legal matters.

Finally, small-scale farmers proposed to overcome previous negative experiences in contracting by building better relationships. Small-scale farmers suggested that Company D could show its readiness to engage in long-term arrangements by investing in local infrastructures, such as warehouse and irrigation system, which would create an even closer bond between Company D and small-scale farmers.

11.3.2 The Stakeholders' Model

Stakeholders developed the second model during the focus group discussion (Table 11.5). This section compares the Stakeholders' Model to the Small-scale Farmers' Model to explore similarities and differences in proposed options for improving contract farming conditions.[121]

[121] It is worth mentioning that small-scale farmers and stakeholders developed their models separately from each other and without information on what the other party suggested. This was done to secure unbiased views from each side. In addition, the Stakeholders' Model included the propositions from Company D.

Table 11.5 The Stakeholders' Model

What needs to be done?	How can it be done?	Who should do it?
• *Advance the contract design*	• Providing win-win contracts • Making contract terms and conditions clear • Regulating contracts through a legal framework • Allowing small-scale farmers to be present, discuss and agree on the contract design • Developing farmers' associations or groups to increase the bargaining power • Finalising contract farming strategy and developing legal/institutional framework • Providing complete contracts, especially with defined clauses on the price, what to do in the case of breach and dispute mechanism	• Government • Company D • Small-scale farmers • Farmers' associations or groups
• *Increase trust levels*	• Acting in a good faith • Long-term investment in making a relationship better • Knowing expectations from farmers • Increasing Company D's presence in the local area (not just during the marketing days) • Establishing and maintaining communication between parties	• Company D • Small-scale farmers
• *Improve pricing*	• Clearly defining the price in the contract • Ensuring minimum guaranteed price in the contract in $US	• Company D
• *Improve enforcement of the contract*	• Organising selling through farmers' association and not individually	• Company D
• *Strengthen small-scale farmers in paprika sector*	• Developing farmers' associations or groups for paprika	• Small-scale farmers • Farmers' associations or groups

Table 11.5 The Stakeholders' Model - *Continued*

What needs to be done?	How can it be done?	Who should do it?
• *Decrease market volatility*	• Clearly defining the price in the contract	• Company D
• *Increase traded volumes*	• Organising selling through farmers' association (and not individually) to achieve bigger volumes • Defining minimum volumes in the contract based on farmers' average production • Providing bonuses or transportation for excess volumes delivered	• Farmers' associations or groups
• *Eliminate side selling*	• Introducing innovative selling methods (price information and selling intention by SMS) • Acting in a good faith • Increasing Company D's presence in the local area (not just during the marketing days) • Organising selling through farmers' association and not individually	• Company D • Farmers' associations or groups
• *Improve infrastructure*	• Investing in warehouses	• Government through NGOs • Small-scale farmers through associations or groups
• *Improve input provision*	• Providing sufficient seeds, fertilisers and chemicals to farmers' association in time • Establishing revolving funds • Calculating gross margins and the cost of inputs to encourage input provision • Developing farmers' associations or groups so Company D can offer loans on the group basis, not individually • Rewarding loyal farmers with inputs to encourage them	• Company D • Farmers' associations or groups
• *Improve pricing*	• Mutually agreeing on the price	• Company D

Both Models showed great similarity in recommendations for improving input provision. Small-scale farmers and stakeholders were united in suggesting that Company D should provide sufficient amount of inputs in appropriate time,

associations should be encouraged to build their capacities and receive loans for their members and revolving funds should be established. Stakeholders proposed rewarding loyal farmers with inputs. It was suggested that Company D might consider calculating gross margins and input costs that small-scale farmers incur, as this would increase Company D's understanding on how necessary it is to secure inputs for small-scale farmers through the contract.

For improved price, stakeholders suggested that Company D should open the door for small-scale farmers and allow mutual agreement on the price, which was similar to what small-scale farmers proposed. While small-scale farmers required Company D's guaranteed purchase and for other buyers to enter the market to decrease market volatility, stakeholders saw the solution in clear definition of the price in the contract.

Following the set of options to overcome side-selling from Small-scale Farmers' Model, stakeholders agreed with farmers that side-selling could be reduced if Company D purchased paprika through registered farmers' associations. Stakeholders believed that by acting in good faith and increasing Company D's visit to communities, side-selling could be lowered.

An innovative system of purchase was proposed, which was similar to the small-scale farmers' idea on revolving funds to purchase small volumes from farmers. Stakeholders suggested that instead of associations, Company D should take the leading role by establishing a system where small-scale farmers would receive information on the daily price offered by Company D via mobile phones. Farmers would then be free to decide when and what quantities they want to sell to Company D. Also, Company D might have its local representatives who would purchase smaller volumes in remote areas and thereby decrease Company D's transaction costs.

Both small-scale farmers and stakeholders had similar ideas on how to increase trust between parties: through continuous communication, acting in good faith and honouring responsibilities, and eliminating vagueness by knowing the other side's expectations especially regarding price. Regarding poor contract design, small-scale

farmers and stakeholders stated that clearly defined contracts would improve the current status. Moreover, stakeholders strongly emphasised the role of Government in (i) finalising the Strategy and (ii) regulating contracts through an efficient legal framework. Another strong point in the Stakeholders' Model was a suggestion to strengthen farmers' associations to increase farmers' bargaining power in the process of contract formulation. Strong farmers' associations would have more power to initiate and insist on contract enforcement in the case of dispute.

Unlike small-scale farmers, stakeholders highlighted the idea of defining minimum volumes in the contract based on farmers' average production capacities to increase traded volumes. The increase was expected to be spurred by the fact that if Company D defined minimum volumes and coupled this new information with the incentive to provide bonuses or transportation for excess volumes delivered - small-scale farmers might supply more paprika. Finally, small-scale farmers and stakeholders agreed that previous negative experience in CF could be overcome by investing in the local infrastructure (e.g. warehouse). Nonetheless, while small-scale farmers attributed this responsibility solely to Company D, stakeholders believed the investment should be encouraged by NGOs and associations and through public funds from Government projects.

11.4 Discussion Point

The results indicated that stakeholders prioritised the key challenges differently. While the enabling environment put the most emphasis on the contract design, small-scale farmers deemed that input provision is the most important issue. Company D was most concerned with side-selling. Prioritising challenges was followed by proposing and critically evaluating options for improved contracting conditions, which showed great similarities in how stakeholders perceived their roles and responsibilities in the supply chain. Recommendations in chapter 12 provide a detailed description on proposed options for improving contracting conditions through the Integrated Model.

11.5 Summary

Chapter 11 builds upon the previous chapter, which identified the key challenges in the paprika supply chain. In this chapter, challenges were ranked according to priority by supply chain participants. The results showed that, initially, there was no agreement about priorities among raters. Once small-scale farmers were excluded, the results indicated significant agreement among raters. A further step involved proposing options for improving contract farming conditions. The options were suggested through two models: Small-scale Farmers' and Stakeholders' Model. Options were critically assessed, discussed and incorporated into the Integrated Model (chapter 12) that addressed each challenge identified in the chain. The Integrated Model represents a way forward for Malawi's paprika supply chain.

PART FIVE: CONCLUSIONS

Chapter 12 Conclusions

12.1 Introduction

The fifth part of the study synthesises all the evidence presented to draw conclusions and position the study's findings within the existing knowledge. Chapter 12 is divided into four main sections. The first section revisits the study's research questions and identifies the key conclusions from the study. Recommendations from the proposed Integrated Model are outlined for each supply chain participant in the second section. The third section outlines the study's contribution to knowledge, methodology and practice. Suggestions for further research in the field of contract farming are provided in the fourth section.

12.2 Dynamics of Vertical Integration for the Paprika Supply Chain in Malawi

Related sub-questions for Objective 1: How do key players in the paprika supply chain interact among themselves regarding their roles, responsibilities and relations? What are the characteristics of contracted small-scale farmers? What is the level of small-scale farmers' involvement in farmers' organisations/unions and which factors influence small-scale farmers' membership?

12.2.1 Contractual Relationship within Vertical Marketing System for Paprika Production

The paprika supply chain in Central Malawi reflected the tendency of the modern agri-food industry to organise tight vertical relationships among operating units. The choice of a contract as a governing mechanism had advantages over the traditional spot market mainly due to its potential to increase control over the production and marketing process, achieve quality standards and address market inefficiencies (Warning and Key, 2002; Coleman *et al.*, 2004; Groenewald *et al.*, 2012; FAO, 2013; Jia and Bijman, 2013; Dries *et al.*, 2014). The nucleus-estate model of contracting provided Company D with access to small-scale farmers as a production base, while at the same time Company D's estates served as a backup for securing enough volumes of paprika (Eaton and Shepherd, 2001; Prowse, 2012). The study concludes that the contractual relationship will continue to be the dominant marketing channel for export-oriented paprika production in Malawi since

contracting enables companies to mobilise the small-scale agricultural sector, which has the needed advantage of producing quality paprika with low-cost labour. The Government's on-going attempt to regulate contractual production through the National Contract Farming Strategy also increases the attractiveness of contracts as a governing mechanism for a food supply chain. Moreover, contract farming arrangements for paprika in Malawi are likely to increase following global food trends, demand for high-quality diverse foods and strong vertical integration. This concurs with Kherallah and Kirsten (2002), Miller (2003), and Jia and Bijman (2013) who stated that contract farming and similar arrangements involving farmers in developing countries are likely to increasingly dominate global food supply chains in the coming decades.

12.2.2 General Profile of Contracted Small-scale Paprika Farmers

The study revealed the general profile of small-scale farmers that participate in the paprika supply chain in Malawi. The majority of contracted households had a male head, over 40 years old and attained a primary level education. The households had up to six members and poor access to electricity. The main occupation of the households was farming, and small-scale farmers had up to three years of experience in paprika cultivation. The differences in the household assets were mostly reflected in the transport and communications means as high-income households and households with large land allocated to contract farming owned more motorcycles and had better access to television and telephone compared to other household types. The study infers that small-scale farmers engaging in Company D's contract for paprika are economically vulnerable, and with limited opportunities for commercialisation of their agricultural production. This finding is consistent with the ample literature that suggests contract farming attracts small-scale farmers, who are otherwise excluded from the premium food supply chains due to their low investment capacities, to access secure markets for their product and gain access to inputs and extension services (Singh, 2003; Swinnen and Maertens, 2007; Reardon and Gulati, 2008; Vorley *et al.*, 2008; Tonts and Siddique, 2011; Barrett *et al.*, 2012; da Silva and Rankin, 2013; Hazell and Rahman, 2014; Wang *et al.*, 2014).

12.2.3 The Quality of Communication among Players

The paprika supply chain in Malawi's Central Region consisted of two key players and the enabling environment. Two key players involved small-scale farmers supplying raw paprika and the contractor buying and exporting raw paprika. Small-scale farmers and the contractor interacted with the enabling environment involving: the farmers' association and union; civil society; NGOs; aid organisations; research and development units; and the Ministry of Agriculture. The study concludes that overall communication among the actors in the paprika supply chain was poor in terms of direct and regular information sharing. Qualitative and quantitative analyses provided evidence to support this claim. Small-scale farmers rarely communicated with the farmers' club/organisation and received only limited assistance and policy support from the enabling environment considering production processes. The assistance was particularly missing with regard to marketing, input provision and negotiation issues. The official communication between the Company D and small-scale farmers was limited to occassional visits from extension workers. Less than one-third of small-scale farmers directly communicated with Company D. This finding implied that the key players in Malawi's paprika supply chain operated under asymmetric information, which is partially due to poor communication. Asymmetric information is recognised in both contract theory and supply chain management literature as one of the obstacles that hinders small-scale farmers' active involvement in supply chains, since the information asymmetry could stimulate power imbalance, exploitation and opportunistic behaviour (Vavra, 2009; Minot, 2011; Jia and Bijman, 2013).

12.2.4 The Potential of Collective Action for Improved Contracting Conditions

The level of involvement in the farmers' organisations was high among contracted small-scale farmers. The contracted households were mainly members of agricultural cooperatives, Farmers Union Malawi and trade unions. Small-scale farmers' membership in the Farmers Union Malawi was influenced by geographical location, age, income level, landholding size, distance to the collection point, and assistance received from the NGOs and the Government. This study concludes that despite small-scale farmers’ satisfaction with their membership in farmers’ organisations, the potential of collective action was underutilised in the paprika supply chain. Small-scale farmers did not fully exploit the opportunity for joint price negotiation,

potential income increase, new production practices, information sharing, input provision and collective marketing of paprika, which are some of the advantages of farmers' organisations emphasised in the literature (Stockbridge *et al*., 2003; Merkelova *et al*., 2009; Abebaw and Haile, 2013; Wanglin and Abdulai, 2016).

12.3 Implications of Contract Farming for the Livelihood of Small-scale Farmers

Related sub-questions for Objective 2: What factors motivate small-scale farmers to enter contracts? How does contracting affect small-scale farmers' livelihoods in terms of productivity, income generation and food security? Are small-scale farmers willing to expand their contracting to other crops and which factors influence small-scale farmers' willingness to expand?

12.3.1 Factors Influencing Engagement in Contractual Relationship

The study revealed that small-scale farmers joined contract farming to obtain needed inputs, have a guaranteed market for produced paprika and receive free extension services. In particular, the high costs of inputs (especially fertilisers) and the lack of quality seed available on the market motivated small-scale farmers to enter the contract. Better off farmers (with higher income and larger land allocated to CF) were less dependent on inputs compared to other household types. The main motivating factors reported by the contracted small-scale farmers were in accordance with the mainstream literature suggesting that the main function of the contract was to overcome market imperfections, namely lack of input markets, high transaction costs in finding a suitable market and information asymmetry (Bauman, 2000; Kherallah and Kirsten, 2001; Jia and Bijman, 2013). The study therefore concludes that small-scale farmers enter contract farming to take advantage of the suitable and in demand CF export crop, utilise available contractual offer and provisions, and gain economic benefit from their production. This conclusion supports the existing literature (especially Eaton and Shepherd, 2001; Bogetoft and Ballebye Olesen, 2002; da Silva, 2005; Barrett *et al*., 2012; Abebe *et al*., 2013) which suggests that farmers engaged in contracting if their perception is that the benefit received from a contractual relationship was higher or equal to the best alternative. Moreover, some studies (such as Glover and Kusterer, 1991; Simmons, 2002; Kirsten and Sartorius,

2002; Bijman, 2008) argued that farmers entered contracts to start production of a high-value crop, secure their market and reduce transaction risks, which corroborated with the findings in this study.

12.3.2 Contract Farming Effects on Small-scale Farmers' Livelihood

The study's results indicated that the majority of the households agreed that contract farming had a positive influence on their livelihoods. Small-scale farmers mostly allocated a small proportion of their land to contracted paprika. Small-scale farmers produced up to 200 kg of dried paprika per season, which was considered low. Although some small-scale farmers reported improvements in their productivity and an increase in the plot size after joining contract farming, the lack of the input provision from the contractor limited achieving higher yields. The income generated from contract farming activities was the most important source of households' income, but it was only partially sufficient to meet households' yearly needs. The perception on the sufficiency of the income from contracting varied among household types, and for the low-income households, the income from contract farming was the least sufficient. The contracted small-scale farmers experienced, on average, 7 months in a year when they faced troubles in securing enough food for the household members, but the households who generated sufficient income from contract farming activities reported a lower frequency of hunger. Thus, the study concluded that contract farming had a mixed influence on small-scale farmers' livelihoods in Central Malawi. Having a contract granted access to the guaranteed export market, quality seeds and free extension services for Malawian small-scale paprika farmers, and households with sufficient income from contracting had less hungry months. Nonetheless, small-scale farmers' productivity, income generation and access to other important inputs and services remained limited. This finding is in accordance with more recent studies on contract farming from Bolwig (2012), Bellemare (2012), Fréguin-Gresh *et al*., (2012), Fréguin-Gresh and Anseeuw, (2013), Rüsch *et al*. (2013) and Mwambi *et al*. (2016) who also reported mixed effects of contracting on farmers' livelihoods in Uganda, Madagascar, South Africa, Tanzania and Kenya.

12.3.3 Conditions for Expanding Contracting Arrangement to Other Crops

The results indicated that small-scale farmers intended to stay in contractual relationship for paprika in the coming years and more than half of the contracted households planned to expand contract farming to other crops. The factors influencing small-scale farmers' willingness to expand contracting to other crops included geographical location, the level of education, landholding size, the size of the land allocated to contracted crop, yield per season, costs of inputs, and sufficiency of income gained through contract farming. The study draws conclusions that education, farm characteristics and the sufficiency of the income generated from contract farming play a key role in small-scale farmers' willingness to expand the contracting arrangement. This finding is in line with the literature suggesting that factors influencing farmers to participate in contract farming involve education level of the household head, farm size, geographical distance and farm income (Miyata *et al*. 2009; Okello and Nzuma, 2012; Girma and Gardebroek, 2015; Kariuki and Loy, 2016; Kumar *et al*., 2016).

12.4 Key Challenges of the Contractual Relationship

Related sub-questions for Objective 3: What are key challenges in Malawi's paprika supply chain? How does the structure and the content of the contract for paprika support efficient and sustainable relations? What is the level of side-selling in the paprika supply chain and which factors influence small-scale farmers' engagement in side-selling?

12.4.1 Overall Challenges in the Paprika Supply Chain

The key challenges identified in the paprika supply chain involved: previous negative experience with contract farming; volatile market conditions; low levels of trust; missing legal framework; poor contract design and input provision; non-transparent grading system; no bargaining; low price; small quantities sold to the contractor; misunderstanding of the contracting principles; and side-selling. Poor contract design and side-selling were the most severe challenges. Thus, the study infers that Malawi's paprika supply chain encountered numerous challenges that were primarily related to the nature of the relationship between two contracting parties and the lack of external mechanisms to direct contracts within the supply

chain. The identified challenges concur with the existing literature as the unequal bargaining power, information asymmetry, side-selling, inputs misuse and difficult contract enforcement pose great threat for contract farming operations (da Silva, 2005; Ramaswami *et al*., 2006; Shepherd, 2007; Pulton *et al*., 2010; Minot, 2011; Jia and Bijman, 2013; Cai *et al*., 2014b).

12.4.2 Contract Design and Its Capacity to Support Efficient Supply Chain and Sustainable Contractual Relations

The study found that the contract for paprika in this study consisted of 11 defined clauses, while the price clause was partially defined. The contract did not define the clauses related to grades, applicable law, dispute settlement, termination, and *force majeure*. The incompleteness of the contract was reflected in an unequal distribution of risks and power between Company D and small-scale farmers. Therefore, the concept of contractual incompleteness, which is essential to contract theory, was confirmed in this study (Hart, 1988; Hart and Moore, 1999; Maskin, 2002; Brousseau, 2008; Saenger, *et al*., 2012; Cordon *et al*., 2013). The study infers that poor contract design limited efficiency of the supply chain and sustainability of the relationship between the key players. This finding affirms some points from the literature addressing contract design. First, the potential of contract farming to secure a reliable supply, stable relationship and economic benefits for small-scale farmers can diminish due to unclear and incomplete contract clauses (Vavra, 2009; Melese, 2012; Prowse, 2012; Pultrone, 2012). Second, poor contract design can amplify the power imbalance between parties and allow the imposition of unfair conditions on the weaker party, for instance the price determined at the sole discretion of the contractor as found in this study (da Silva, 2005; Echánove and Steffen, 2005; Bijman, 2008; Cotula, 2010; Smalley, 2013). Overall, the recommendations following the study's conclusion on the contract design are in line with the direction of the Legal Guide (2015) advocating for more transparent, fair and complete contracts.

12.4.3 Severity of Side-selling for Supply Chain's Efficiency and Sustainability

More than one-third of the contracted households engaged in side-selling and the side-sellers sold 10-50% of their contracted paprika to the vendors. The results

showed that the main reason for side-selling was the higher price offered by the vendors. The study concluded that vendors played an important role in the dynamics of the paprika supply chain primarily by offering a higher price, transportation service and building trust with small-scale farmers. Vendors enabled quick access to money for small-scale farmers and therefore contributed to farmers' income generation. Nevertheless, Company D lost between 19.9-44.6% of the paprika due to side-selling, which reflected on the efficiency of the paprika supply: the shortages in expected volumes of paprika had to be substituted from other sources, which increased Company D's transaction costs. In addition, side-selling practices decreased the trust level between Company D and small-scale farmers and threatened the sustainability of the contractual relationship. This study concludes that side-selling considerably contributes to low efficiency of the Malawian paprika food supply chain and promotes distrust among the chain participants. This finding is in line with the literature stating that, although side-selling might seem rational from a farmer's economic perspective, it jeopardises the contractor's capability to deliver expected volumes and does not support the sustainability of the contracts in the long-run (Bingen *et al*., 2003; Swinnen *et al*., 2007; Mujawamariya *et al*., 2013).

12.5 Improved Contracting Conditions in Malawi

Related sub-questions for Objective 4: What changes or new practices need to be adopted for improved contracting conditions? How can the identified options for improving contracting conditions be implemented in the Malawian paprika supply chain? Which actors need to implement the identified options?

The most important changes and practices identified by the supply chain participants as options for improving contracting conditions were: transparency in contract design; increased participation and negotiation with small-scale farmers through farmers' organisations; a sound legal framework; compliance with the contract terms and conditions; and quality communication. The options are to be implemented through a set of targeted actions at a local level and through policy measures on a national level. The actors responsible for implementing needed changes are small-scale farmers, contractors and the enabling environment. The study draws the conclusion that improving contracting conditions for small-scale farmers in Central Malawi must be done simultaneously at the farmers' and contractor's level and

institutional instance to enable desired changes in the supply chain. Section 12.7 in this chapter addresses recommended options in more detail.

12.6 Overall Conclusions and Implications

The overall research question was: *How can contracting conditions in Malawi be improved, especially for small-scale farmers, to facilitate more efficient and sustainable relations in the existing paprika supply chain?*

The study concluded that the current dynamics in the paprika supply chain do not enable further developments. The increasing competition in global food markets will continue to pose new standards and restrictions, which might result in tighter vertical integration. Since the current paprika supply chain in Malawi relies on poor small-scale farmers, it is uncertain whether it will reach its potential regarding quality and volume due to the limited capabilities of small-scale farmers. Expanding the supply chain by increasing the number of small-scale farmers to achieve higher quantities will increase contractors' transaction costs without the guarantee of better volumes. To improve its efficiency, there is a need for the paprika supply chain to be re-structured primarily in terms of communication and targeted support provision to small-scale farmers to leverage the overall dynamics towards higher quantity and quality standards.

Furthermore, the effect of contract farming in Malawi has to be reconsidered. The rising importance of the paprika sector for Malawi's export and economic growth might tempt greater advocating for contract farming arrangements from the Government and NGOs' side. The increase in contract farming arrangements puts pressure on contractors in terms of provisions they are willing to include in the contract. Malawi's input and service market showed lack of efficiency, and one of the advantages of contract farming is the potential to overcome this failure. Nonetheless, contractors are limited in what they can efficiently provide through contracts due to cost implications. Small-scale farmers in Malawi are restrained from fully benefiting from contract farming because of their small land size and low productivity levels. Income generation in contract farming is tightly related to prices on the global market, which tend to fluctuate, so overall outcomes of contracting are often uncertain. This is an indication that contract farming in Malawi needs clearer

incentives, and the requirements should be communicated to potential contracted farmers and be accompanied with realistic expectations on what contract farming *can* and *cannot* secure in a given context. The study confirmed, as suggested in the literature, that contracting alone is not a suitable option for rural development or securing livelihoods.

The study concluded that the paprika supply chain is not reaching its optimal performance and relationships in the supply chain are not viable in the long-term. Through the lens of supply chain management, the goal of every chain is to regulate relationships in a way that achieves maximum profits for all players with minimum costs incurred. According to this study's findings, this was not the case with the paprika supply chain. If the present situation continues, Malawi's paprika supply chain might be forced to collapse under the pressure of inefficient performance. The same paprika supply chain in Malawi already collapsed in the past due to similar challenges. Whilst lessons might have been learnt they have not yet been implemented in practice. This study suggests improving the situation in the chain primarily by re-formulating contracts and reducing side-selling. Both options have implications for the key players. Company D could allow small-scale farmers to actively participate in the price formulation since the negotiation of the price might sensitise small-scale farmers' to comply better with the contract terms and avoid side-selling. The contract should be designed with greater attention to fair conditions for the involved parties and more consideration to prevent any negative impacts on the efficiency and sustainability of the supply chains. The contract should also account for the differences in market power and balance potential opportunistic behaviour by using various enforcement mechanisms. Well-designed contracts and strong vertical integration in marketing systems represent a crucial part in developing effective and efficient supply chains.

More frequent visits to small-scale farmers might reduce the sense of distance between Company D and farmers, and thus reduce side-selling. Small-scale farmers should form and strengthen farmers' cooperatives to enable successful price negotiation with Company D and secure more volumes of paprika. The Malawian Government should promote the education of small-scale farmers through targeted

training to increase their understanding of long-term negative consequences of side-selling and encourage practising loyalty to Company D.

This study found that restructuring Malawi's paprika supply chain is a feasible task since general opinions about how this should be done are similar among stakeholders. Company D and the Government must take the lead in such endeavours and influence the rest of the supply chain. The proposed options (see chapter 11) should be synchronised with conditions outside the chain as well, so that internal dynamics can accommodate what is happening in the global paprika market (e.g. increased or decreased demand) and avoid short-term *ad hoc* innovations. Improvements should be in accordance with economic conditions and available resources in Malawi. For instance, although useful in the long-term, options for investing in infrastructure might come after strengthening farmers' associations and their capacity to allocate inputs for its members. The study concluded that the key to improving contracting conditions in Malawi's paprika supply chain lies in unlocking the existing potential of collective consciousness about the need for fair, reciprocal and trustworthy rules for contract farming and directing this potential to affect actions and reactions of every player in the chain.

12.7 Recommendations for the Supply Chain Participants

This section outlines the key recommendations for each player in the supply chain. The recommendations from two Models elaborated in chapter 11 were integrated and synthesised in an Integrated Model depicted in Figure 12.1. The Integrated Model follows the initial structure of identified key challenges (see chapter 10, section 10.2.1, Figure 10.1) and proposes options to address each challenge and improve contracting conditions in the paprika supply chain.

The first challenge was described as follows: ***Poor input provision in the contract can be attributed to the low level of trust between parties. The low trust was based on the negative experiences with previous contracting***. The concept of absent trust was not easy to tackle since it was rooted in other challenges too. Previous negative experience and related reduced input provision were sensitive issues for both key players. The Integrated Model suggests focusing on creating a new image of contract

farming in Malawi, which will be grounded on building a relationship between parties based on trust, participation and fairness.

One of the overarching principles in a renewed contract farming system should be guaranteed purchase and selling, which primarily means honouring one's obligations to avoid uncertainties. A well-designed contract should secure guaranteed purchase and selling, and contribute to creating a more positive image of contract farming. In addition, the key players should enhance their relationship, and the Government should develop and implement the National Contract Farming Strategy with an aim to: regulate and monitor contract farming activities; secure a sound legal framework for enforcing contracts; and offer incentives for 'fair contracting'.

The National Contract Farming Strategy should provide guidelines on contract design to create a win-win situation for both small-scale farmers and companies. Hence, the Strategy must encourage formulation of attractive contracts with defined minimum required clauses and fair contracting principles based on transparency and reciprocity. Malawian and other similar contracts should unambiguously include (but not be limited to) the following clauses: parties, duration, inputs provided, grades, price and payment, quantity, quality and delivery terms, breach and consequences, liabilities, termination, dispute settlement, force majeure, applicable law and signatory.

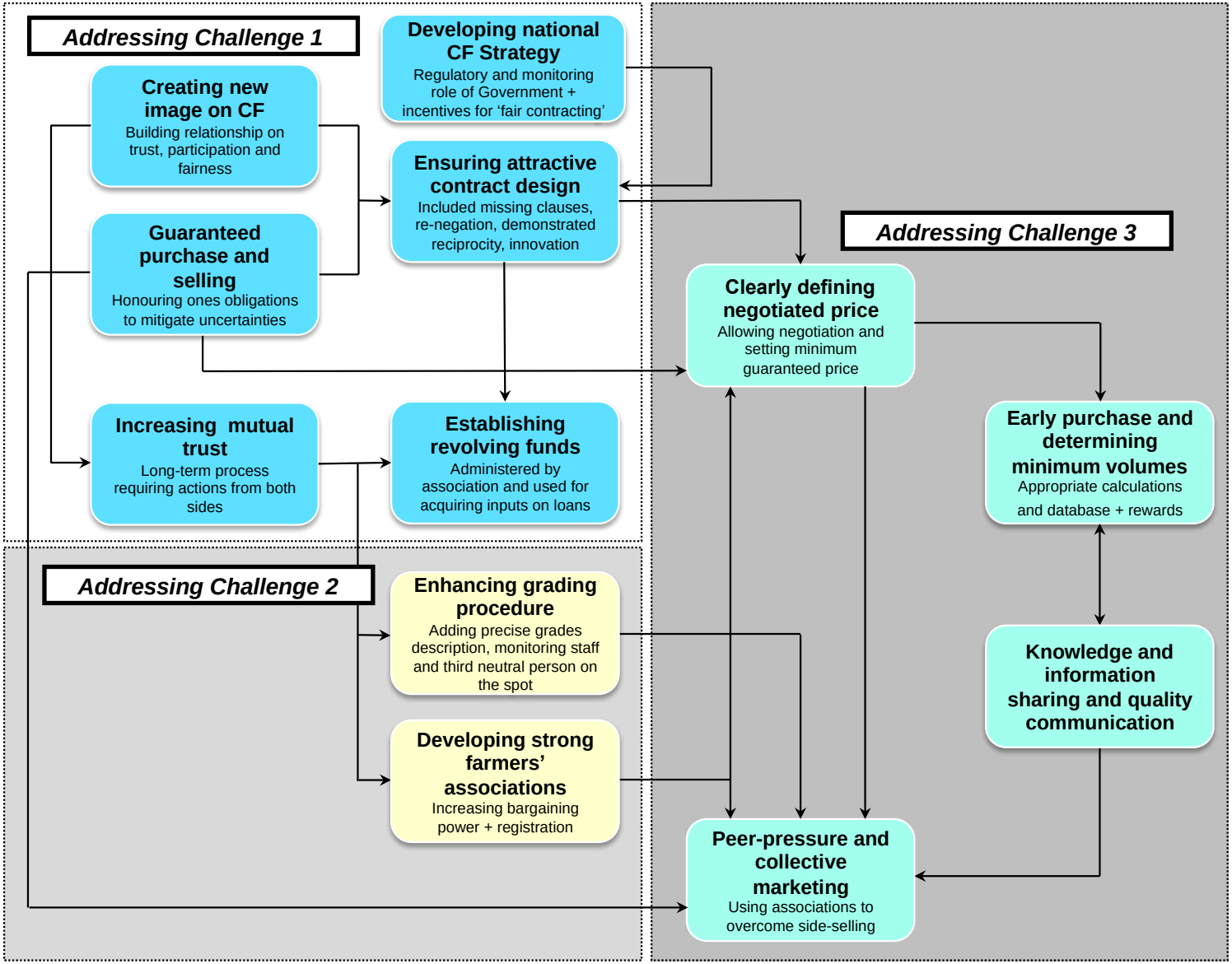


Figure 12.1 Integrated Model for improved contracting conditions in Malawi's paprika supply chain

The Integrated Model proposes that both sides should adopt practices that can contribute to increasing trust levels. To earn Company D's trust to provide more inputs, small-scale farmers should direct their activities through associations, which can then establish revolving funds to channel inputs from Company D and regulate purchasing volumes. The Integrated Model proposes to address Challenge 1 through re-building the contract farming image and trust by having the National Strategy in place, offering attractive contracts, guaranteeing purchase and organising selling through associations that have the capacity to receive, distribute and control loans.

The second challenge was described as follows: ***Small-scale farmers lacked the opportunity to bargain and participate in the design of the contract. This limitation resulted in small-scale farmers' reduced sense of responsibility for complying with agreed terms and led to the breach of contract.*** Exclusion from contract formulation and negotiation of any term was another sign of mistrust in the supply chain. In particular, the non-transparent grading system was a critical challenge in Malawi's paprika supply chain. The Integrated Model here extends on the recommendation of increasing mutual trust and proposes enhanced grading procedures. This means that Company D should include precise grade descriptions in the contract, monitor its staff and allow the presence of a neutral third person during the grading process. The proposed actions should restore small-scale farmers' trust in Company D's grading.

Small-scale farmers could considerably increase their bargaining power by joining registered associations. The promotion of associations should, in particular, focus on households with (i) an older head, (ii) small landholding size and (iii) related to NGOs in the community since households with those characteristics showed to be more likely to become members of FUM. Strengthening of farmers' associations should lead to negotiation of more favourable contracting conditions for small-scale farmers, potentially more inputs provided as Company D is keen to collaborate with associations and reduced breach of the contract due to peer-pressure within associations. The Integrated Model proposes to address Challenge 2 by introducing advanced grading procedure and empowering associations and their role in representing farmers' interests in the contract to increase small-scale farmers' bargaining power and sense of collective responsibility.

The third challenge was described as follows: ***The price offered in the contract did not match small-scale farmers' expectations. Hence, small-scale farmers turned to selling the crop to vendors for a higher price*****.** The lack of information sharing and negotiation left small-scale farmers with no guarantee for the price they will receive from the contractor for the delivered crop. In addition, a parallel paprika market offered by vendors was tempting for small-scale farmers. The Integrated Model suggests following up on ideas of attractive contract design and guaranteed purchase by clearly defining the price negotiated with small-scale farmers in the written contract. A stated minimum guaranteed price might attract associations to sell their crop to Company D and through peer-pressure reassure members to reduce side-selling practices.

The Integrated Model proposes three pillars for efficient and sustainable contracting relations: knowledge sharing, information sharing and quality communication. Through regular visits, demonstrations and communication, Company D could gain more trust among small-scale farmers and increase compliance with the contract. By knowing the information on small-scale farmers' conditions concerning production costs and average yields, Company D could reduce information asymmetry and set more realistic goals for its trading volumes. Defining minimum volumes in the contract should be informed by appropriate calculations according to household types and capabilities. Encouraging small-scale farmers to exceed minimum volumes by offering targeted incentives (i.e. free inputs for the next season) could result in increasing trading volumes for Company D. Practicing early purchase (immediately after harvest cycles) might secure more volumes to the contractor. The Integrated Model proposed to address Challenge 3 through negotiating and clearly defining a minimum guaranteed price in the contract, determining minimum volumes, rewarding excesses and practising early purchase in communities, and by sharing the knowledge and information with small-scale farmers and nurturing communication on a regular basis. The summary of the study's recommendations is presented in Figure 12.2.

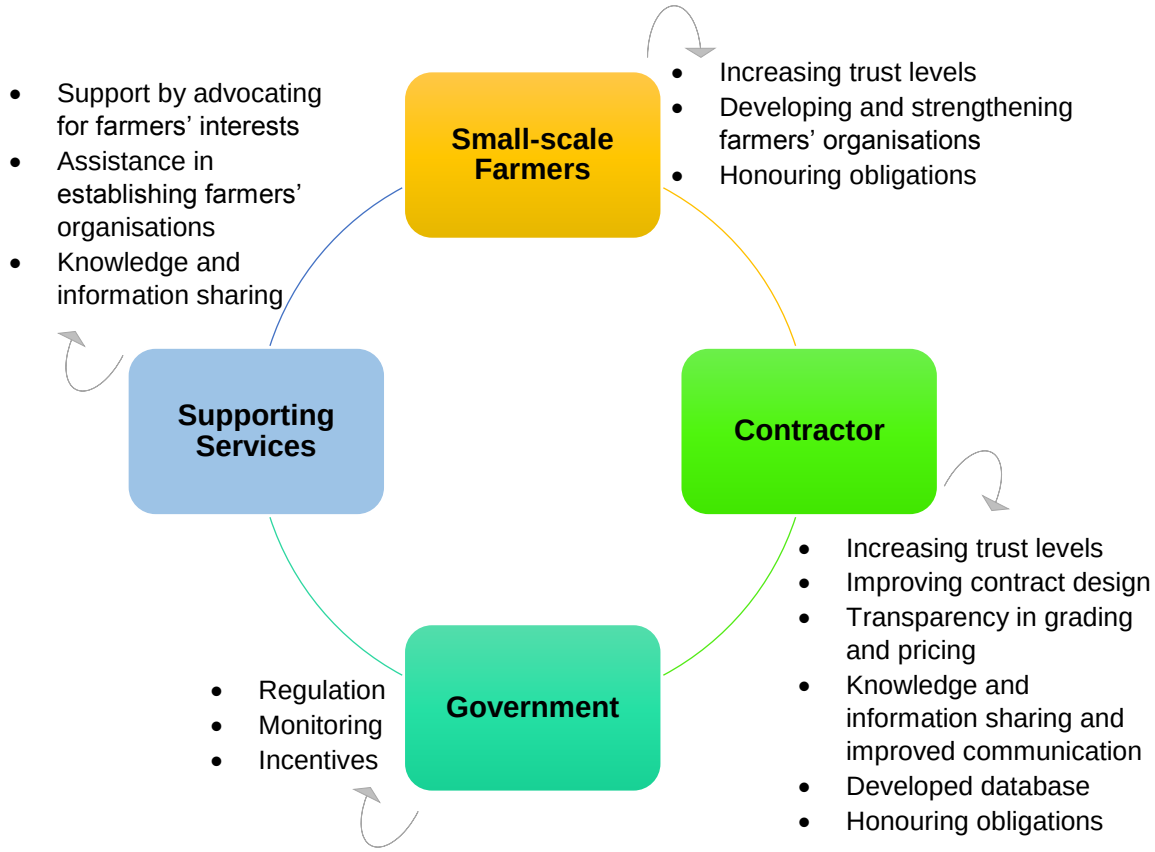


Figure 12.2 Recommendations for supply chain participants

12.8 Study's Contribution and Originality

12.8.1 Contribution to Knowledge

The field of contract farming is extensive and lies on the intersection between of at least three disciplines: economics, agriculture and sociology. Contract farming is explored from many perspectives, while the body of evidence from developing countries is continuously growing. However, some gaps in our understanding of this phenomenon require special attention (see chapter 1, Section 1.4). This study contributes to knowledge in five main aspects. First, the study provides a new original dataset and evidence on the food supply chain management and contracting in a developing country context. In general terms, this study continues and expands upon the empirical studies on contract farming performance in Sub-Saharan Africa (Bolwig *et al.*, 2009; Jones and Gibbon, 2011; Rüsch *et al.*, 2013; Girma and Gardebroek, 2015; Bellemare and Novak, 2016; Mwambi *et al.*, 2016). More specifically, the study provides rich, in-depth insights into the Malawian paprika supply chain and the relations among participants using the mixed methods, participatory approach and the lens of New Institutional Economics. Thus, the study fills the gap concerning the lack of recent empirical evidence on the state of contract

farming in Malawi. Second, the study emphasised the importance of contract design for contract farming arrangements, as earlier pointed out by Cotula (2011), Prowse (2012), Pultrone (2012) and the Legal Guide (2015). Through the analysis of Company D's contract, this study suggests better practices for designing food supply contracts to enable fair conditions and meaningful benefits for small-scale farmers.

Third, this study extends the knowledge on side-selling. Side-selling as a phenomenon is still an underexplored topic in the food supply chain management literature. The theoretical framework for side-selling is well-developed through the concept of opportunistic behaviour, however the empirical studies on side-selling are scarce despite the substantial influence that side-selling potentially has on the efficiency and sustainability of supply chains. This study investigated the extent of, reasons and triggers for side-selling to bridge the existing knowledge gap and, by using empirical evidence, contribute to better understanding of side-selling mechanism. The significance of the study is that it quantifies side-selling and estimates factors other than money that are likely to trigger side-selling. Also, the study recommends actions for decreasing levels of side-selling, which can improve the operations of Malawi's paprika supply chain. The study's recommendations are widely applicable in cases where a supply chain suffers from opportunistic behaviour like side-selling, both in developed and developing countries. Fourth, the study advances the understanding of the role of vendors in contractual relations. In particular, the vendors' role is examined by triangulating the data from three different sources, which represents a contribution to current scant empirical evidence determining the influence of vendors in contract farming activities. Finally, this study introduces and discusses the Integrated Model for improving contracting conditions in the Malawian paprika supply chain. The Integrated Model is a result of applying a participatory approach to identified key challenges in the supply chain, and it provides a set of correlated actions involving all participants.

12.8.2 Contribution to Research Methodology

The study's contribution to the research methodology reflects in two main aspects: dissemination of the study's findings and the advanced use of mixed methods design (Table 12.1).

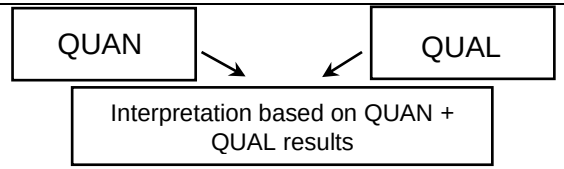
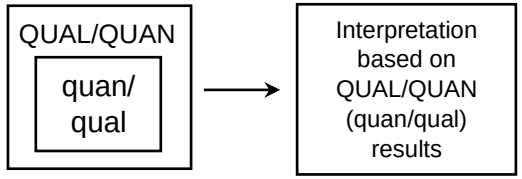
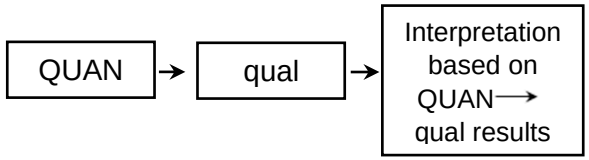
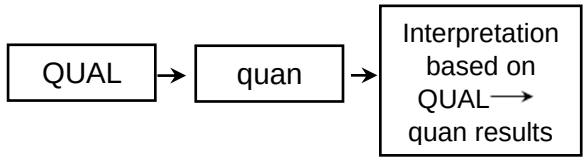
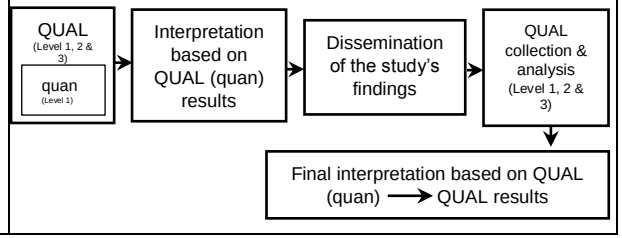
Types of Mixed Methods Design	Description	Purpose	Diagram
Concurrent Triangulation Timing: single phase (concurrent). Priority: equal weight. Mixing: merging results or data.	Concurrent but separate data collection and analysis, merging the results often in the interpretation phase. Variations: Convergence Model, Data Transformation Model, Validating Quantitative Data Model, and **Multilevel Model** (different methods used to address various level within a system).	To better understand the research problem and arrive to solid conclusions about a single phenomenon.	
Embedded Timing: **single or two phases** (concurrent or sequential). Priority: QUAL/QUAN and qual/quan. Mixing: Embedding qual/quan in larger QUAN/QUAL design.	One data set embedded in other data set, one data set providing a supportive role in a study primarily based on the other data set, qual. and quan. data answer different research questions. Variations: Embedded Experimental Model and Embedded Correlational Model (both models propose how to embed qualitative data into predominantly quantitative study).	Used when a single data set in not enough and the study needs to answer different types of questions, which require different types of data.	
Explanatory Timing: Two phases (sequential). Priority: QUAN usually as priority. Mixing: Connecting - quan. leads to qual.	Qual. data assists in explaining or builds upon initially quan. results, first phase quan. data collection and analysis, quan. data results, second phase qual. data collection and analysis, qual. data results, interpretation how qual. data explain quan. results. Variations: Follow-up Explanations Model and Participant Selection Model.	To explain or build upon or explain the quan. results using qual. data.	
Exploratory Timing: Two phases (sequential). Priority: QUAL usually as priority. Mixing: Connection – qual. builds to quan.	The results from the quan. method assists in developing or informing the quan. method, first phase qual. data collection and analysis; qual. data results; forming variables; second phase quan. data collection and analysis; quan. data results; interpretation how quan. results provide new, better intervention. Variations: Instrument Development Model and Taxonomy Development Model.	To explore the phenomenon using qualitative data and then to build the second – quantitative phase in the form of variables or propositions.	
*Study design**: Embedded Design-Multilevel Model with both Concurrent and Sequential Data Collection and QUAL Priority*** Timing: Concurrent and sequential data collection. Priority: QUAL as priority. Mixing: Embedding.	In the first phase, qual. and quan. data are collected and analysed concurrently (priority given to qual. data). The interpretation of QUAL and quan results is formulated into the study's preliminary findings and disseminated to the study participants (the results from the first phase inform the second phase). In the second phase, qual. data are collected and analysed. In the final interpretation, the qual. data from the second phase are crosschecked with the qual. and quan. results from the first phase to reach solid conclusions. Modifications done: Timing (both Concurrent and Sequential data collection), multilevel model in Embedded Design and Priority (QUAL in Embedded Design) + Dissemination of the study's findings.	To allow dissemination of the study's preliminary findings and increase the rigour and impact of the applied research.	

Table 12.1 The study's contribution to methodology. Adapted from Creswell and Plano Clark (2007).

This study included dissemination of the study's findings as a vital part of its research design. Dissemination involved additional data collection and subsequent analysis, which increased the study's practical value. Furthermore, the study adjusted the time component of the Embedded Design-Multilevel Model to allow dissemination of the study's findings. Despite the well-developed area of mixed methods approach and many designs available, there exists a certain gap. Current mixed methods approaches divide research into concurrent and sequential only (according to Creswell and Plano Clark, 2007; Teddlie and Tashakkori, 2009; Creswell, 2013), while dissemination of the findings requires the combination of the two. This study demonstrates that the concurrent approach can be used during the first sequence of the research for collecting, analysing, interpreting and integrating qualitative and quantitative data simultaneously. Completely interpreted results from the first sequence can further inform the second sequence (sequential approach), which involves dissemination of the study's findings. Thus, this study contributes to the methodology by incorporating dissemination of the findings into research design to ensure that the findings reach the key stakeholders and that those stakeholders verify the study's findings, which increases reliability and results in better-informed recommendations. In addition, the study extends the use of the concurrent and sequential approach in Embedded Design-Multilevel Model to accommodate dissemination phase of the research. Some of the advanced multiphase mixed methods designs are already developed (see Abbot *et al.*, 2012; Creswell, 2015; Lucero *et al.*, 2016) and although this study has some characteristics of the convergent design (separate collection and analysis of qualitative and quantitative data), there was a need to construct even more appropriate, time-efficient and straightforward design for applied research in the area of food supply chain management.

12.8.3 Practical Contribution

By the choice of research aim and overall question, the study undertook the task to contribute to problem-solve the constraints hindering efficiency and sustainability in the paprika supply chain in Malawi. As a result, the study contributed to contract farming practices in two main aspects. The study proposed and critically evaluated options for addressing the key challenges found in the paprika supply chain through the Integrated Model. This means that the study suggests needed practical steps for

small-scale farmers, Company D and the enabling environment to improve contract farming performance in the paprika supply chain. Also, the study mobilised existing knowledge through the participatory approach from various stakeholders on a country level to empower local participants and encourage them to recognise themselves as part of the solution.

12.9 Further Research

Future research in the area of contract farming in a developing country context should focus on several issues. First, the research should explore the concept of trust in contracting situations and bring new solutions to increase the trust between parties as this issue showed to be critical in this study. Second, assessing how different attributes of contract design affect financial and social welfare of small-scale farmers in developing countries using both qualitative and quantitative approaches will add needed evidence to contract farming literature. Future research should also aim at introducing more efficient and sustainable contract designs based on both farmers' and company's preferences. Improving the supply chain management practices for high-value products through contract design in developing countries should become the priority in future studies. Third, research that is more specific should orientate on exploring and re-defining the role of vendors in contract schemes. Fourth, in the case of Malawi's paprika sector, future research should undertake a longitudinal study that compares contract and non-contract small-scale farmers to assess the impact of contracting on farmers' productivity and income. Ultimately, analysis of the institutional framework(s) and countries' policies and strategies concerning contract design to assess the efficiency and level of alignment with the Legal Guide and SDGs will contribute to better understanding and disseminating of best practices for contract farming in developing countries. In general, future research should focus on assessing the efficiency of contract farming in context-specific conditions and then gradually shift its focus from learned lessons to proposing innovations in contract design and public policies supporting contract farming, in particular using the participatory approach for capacity strengthening (Chancellor and Ludemann, 2012).

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Appendix A Summary of 27 selected empirical studies on CF in developing countries

Source	Sector and country	Contract farming impact	
		Positive	*Negative*
Sub-Saharan Africa (1)			
Huddleston and Tonts (2007)	Oil palm industry in Ghana	• Contract farming created jobs in rural area. • Contracting promoted agricultural development and formed a foundation for improving economic and social conditions of the area.	
Masuku (2009)	Sugarcane in Swaziland	• When based on trust and cooperation, contract can improve performance and reduce transaction costs of enforcement as the opportunistic behaviour decreases.	
Bolwig *et al*. (2009)	Organic coffee in Uganda	• Contract provided positive revenue effects and lowered farmer's uncertainty regarding net returns. • Contract guaranteed a price premium for meeting agreed quality requirements.	
Chirwa and Kydd (2009)	Tea in Malawi	• Contract farmers received better services and increased the profitability of their farming activities.	
Jones and Gibbon (2011)	Organic cocoa in Uganda	• Contract farmers were able to increase the product quality due to technology adoption. • Technology adoption was encouraged by credible incentives primarily from contracting scheme. • Possible spill-over effects involve increased productivity.	
Bolwig (2012)	Organic pineapple and coffee in Uganda	• Contract farming improved household's food security since farmers were able to obtain higher revenues, which enhanced their access to buying food. • Contracts led to poverty reduction for participating households.	• Gender imbalances: women had less control over the benefits compared to men. • Women had the same or larger share of the labour and management tasks.
Bellemare (2012)	Various crops in Madagascar	• Contracts positively impacted the household welfare and have the potential to alleviate the poverty. • Industrial development can be achieved by stimulating processors to expand their operations and involve farmers in agri-food chains.	• Contract farming might increase inequalities.
Bellemare and Novak (2016)	Various crops in Madagascar	• Contract farming can reduce the duration of household's hungry period for 8 days on average and contracted households are 18% more likely to end their hungry season at any time.	

Summary of 27 selected empirical studies on CF in developing countries - *Continued*

Source	Sector and country	Contract farming impact	
		Positive	*Negative*
Sub-Saharan Africa (2)			
Fréguin-Gresh *et al*., (2012) and Fréguin-Gresh and Anseeuw, (2013)	Citrus and sub-tropical fruits in South Africa	• Contracts enabled improvements in productivity, increased incomes, access to services (such as technical assistance, training and capacity building) and resources (such as inputs, credits and information) and opened opportunities for farmers to participate in competitive high-value market.	• Contracts are not a panacea for farmers and should not be considered as a tool for majority of small farmers for addressing imbalances in agricultural sectors. • Contracts are limited to better off farmers (large- or medium-scale) who already have high productivity, equipment and output markets. • There are entry barriers for small farmers (such as access to land and irrigation and education levels) who remain excluded and marginalised. • Contracts did not reduce poverty nor they improved rural livelihoods. • There is a significant doubt whether contract farming can integrate small farmers into modern supply chains and how sustainable contracts are.
Rüsch *et al*. (2013)	Vegetables in Tanzania	• Contract farming was recognised as a suitable institutional tool to overcome land and labour shortfalls and secure meeting quality standards in vegetable production. • Organisation of farmers proved successful based on involvement of village chiefs who ensured the contract details were fully understood and due to clear communication with other partners. • With the help of technical expertise and supervision, farmers were able to achieve certification standards, develop new skills and access lucrative markets.	• The contract scheme suffered from internal issues as the role of management and administration was neglected. • Particularly, financial and operational management skills and experiences of the staff on the contractor's side showed to be an essential precondition for contract farming. • The lack of stated skills to manage complex contracting scheme (no integration of administrative and operational processes, no modern software to track the flow of goods and funds, poor transport decisions which resulted in downgrading the product quality) negatively affected hundreds of farmers.
Girma and Gardebroek (2015)	Organic honey supply in Ethiopia	• Farmers supplying an organic honey under the contract improved their incomes and were able to access the premium price. • The contract offered higher prices for produced honey compared to the local market. • Contract farming proved its potential for encouraging a sustainable management of forests through a supply of forest product.	
Mwambi *et al*. (2016)	Avocado in Kenya	• Contract farmers received better services and increased the profitability of their farming activities.	• The participation in CF was not sufficient to improve household, farm and avocado income.

Summary of 27 selected empirical studies on CF in developing countries - *Continued*

Source	Sector and country	Contract farming impact	
		Positive	*Negative*
India (1)			
Singh (2002)	Vegetables in Punjab	• Contracts enabled higher incomes for farmers and provided more employment for the labour force.	• Contract farming was found to be biased against farmers since the agribusiness companies were dealing with large producers. • Contracts increased the existing challenges in the farm sector, namely high chemical input intensity and social differentiation. • The contract protected the company from unforeseen obligations while the farmer had to perform under all circumstances (no compensation was envisaged in case of *force majeure* events). • The contract was not considered fair: the farmer was obliged to sell the product only to the company and was penalised otherwise; the company was not liable for the failure to purchase farmer's product. • Contract farming was marked with lack of trust between parties and company's tendency towards monopolisation.
Singh (2003)	Hybrid cottonseed in Andhra Pradesh and vegetables in Punjab	• Contract marginally increased real income for women farmers.	• Working conditions under contract farming were inadequate: women workers reported lower wages compared to men, poor working conditions and limited bargaining power. • The increasing amount of child labour was recorder under contract farming schemes.
Tripathi *et al*. (2005)	Potato in Haryana	• The yields, gross and net income over various costs and the price were higher for contract farmers compared to non-contract farmers. • Contract farming improved profitability, resource-use and technology adoption among farmers.	• The costs of production were found 17-24% higher under contract farming due to required investments on seed, fertilizers and equipment.
Ramaswami *et al*. (2006)	Poultry in Andhra Pradesh	• Contract farming was found a useful institutional tool for supplying credit, technology and insurance to farmers. • Contracted farmers experienced lower risks (a proportion of market risk was shifted from farmers to processor) and gained higher returns.	• Contracted production was more efficient than non-contracted, but the surplus was allocated to the processor. • The processor selected farmers with poor prospects as independent growers to increase the efficiency of contract impactand capture most surpluses.

Summary of 27 selected empirical studies on CF in developing countries - *Continued*

Source	Sector and country	Contract farming impact	
		Positive	*Negative*
		India (2)	
Sharma (2008)	Various commodities in Punjab, Amristar, Jalandhar and Ludhiana	• Contracts positively influenced farmer's income and crop productivity.	
Singh (2011)	Winter maize, hyola and green peas in Punjab		• Contract farming scheme was proven inefficient in the case of adverse weather and input provision. • Winter maize and hyola experienced almost complete failure caused by the unfavourable weather conditions and poor quality seeds. • Farmers growing green peas had to sell their product on the open market since it was initially rejected by the contractor due to quality failure. • Farmers found the contractor responsible for the provision of inappropriate fungicide.
Narayanan (2012)	Multiple commodities across India	• It is believed that consistent interaction over the long period between the farmers and the company discourages contract breach. • Contracts were primarily understood as a personal relationships.	• The state policies intended to encourage development of institutional framework for contract farming might be misplaced and ineffective as it is found that both companies and farmers are reluctant to engage into legally binding arrangements. • Both parties preferred to continue transactions outside of legal structures. • Contracts were signed in other person's name from the farmers' side which complicates the track of contracted farmer.
Goel (2013)	Basmati rice in Punjab	• A unique case of PepsiCo suggested that focusing the contract operations in areas less interesting to the competition can become a successful strategy. • Farmers under contract increased their income due to higher productivity and premium prices received and experienced less uncertainty regarding delayed payments and received technical training free of charge. • PepsiCo adapted their contract according to the government regulation and allowed farmers to sell their product to other companies for higher price.	
Narayanan (2014)	Gherkins, papaya, marigold and broiler in southern India	• Contracts for papaya and broiler enabled clear net gains to farmers.	• Contracts for marigold left farmers worse off and contracts for gherkins varied in impact.

Summary of 27 selected empirical studies on CF in developing countries – *Continued*

Source	Sector and country	Contract farming impact	
		Positive	*Negative*
Latin America (1)			
Saenz and Ruben (2004)	Chayote in Costa Rica	• Contracts were considered as an important tool to improve security and involvement of small farmers in international marketing chains. • Farmers were granted access to credit, important inputs and information, and were able to benefit from economies of scale and scope. • Contracting increased products' quality due to better use of land. • Higher levels of loyalty were observed among farmers who received technical support and credit.	
Echánove and Steffen (2005)	Export vegetables and grains in Mexico	• Contract farming represented a link between local farmers and national and international world market. • Contracts enabled a relatively secure outlet for farmers and offered technical assistance and finances for production.	• The risk in contracting arrangement was not proportionally allocated between parties.
Imbruce (2008)	Asian vegetables in Honduras	• Farmers increased their earnings through contracting. • Farmers gained bargaining strength and were forcing companies to abandon written contracts and adjust their policies so that farmers can be allowed to work with more than one export company at the same time. • *Note*: profits should not be the only measure of how successful is particular contracting scheme.	
Michelson *et al*. (2012)	Tomatoes, small green peppers, cabbage and lettuce in Nicaragua	• The contract systematically reduced the price volatility.	• Contractor's prices were significantly lower than prices on traditional market. • Farmers paid too high amounts for their contractual insurance against price volatility.

Summary of 27 selected empirical studies on CF in developing countries – *Continued*

Source	Sector and country	Contract farming impact	
		Positive	*Negative*
Latin America (2)			
Fromm (2013)	Cocoa in Honduras	• Contract farmers received increased prices and improved their income. • It is expected that the investment in farmers' training (knowledge on production, quality and environment) will have the most significant impact in the future. • *Note*: Positive outcomes cannot be attributed only to contract farming but also to work of a number of local and international organisations from public and private sector.	
da Silva Júnior *et al*. (2013)	Biodiesel in Brazil	• Contract farming continues to be a crucial instrument for biodiesel producers and small farmers' organisations. • Having contracts increased farmers' average annual revenue by 600%, offered technical services free of charge, secured fixed price for the crop and reduced risks of finding the market. • Contracts did not jeopardise growing other crops under intercropping systems.	

Appendix B Tables related to results in chapter 8, 9, 10 and 11

Table 1.1A Socio-economic and farming characteristics of households in Nkhotakota and Lilongwe districts

Variable	Nkhotakota (N=125)						Lilongwe (N=303)					
	Income levels (% of total N in NKH)			***CF land allocated (% of total N in NKH)***			***Income levels (% of total N in LLW)***			***CF land allocated (% of total N in LLW)***		
	LMI (n=45)	MMI (n=44)	HMI (n=36)	SLA (n=56)	MLA (n=55)	LLA (n=13)	LMI (n=163)	MMI (n=99)	HMI (n=41)	SLA (n=125)	MLA (n=120)	LLA (n=58)
Age												
Younger (<26-30)	12 (9.6)	12 (9.6)	4 (3.2)	12 (9.6)	11 (8.8)	5 (4)	31 (10.2)	23 (7.6)	13 (4.3)	31 (10.2)	24 (7.9)	12 (4)
Middle-age (31-40)	13 (10.4)	18 (14.4)	15 (12)	23 (18.4)	19 (15.2)	4 (3.2)	38 (12.5)	25 (8.3)	8 (2.6)	26 (8.6)	33 (10.9)	12 (4)
Older (>40)	20 (16)	14 (11.2)	17 (13.6)	21 (16.8)	25 (20)	4 (3.2)	94 (31)	51 (16.8)	20 (6.6)	68 (22.4)	63 (20.8)	34 (11.2)
Education of HH head												
Primary	37 (29.6)	27 (21.6)	24 (19.2)	42 (33.6)	36 (28.8)	10 (8)	135 (44.6)	72 (23.8)	21 (6.9)	92 (30.4)	94 (31)	42 (13.9)
Secondary	6 (4.8)	11 (8.8)	9 (7.2)	10 (8)	13 (10.4)	3 (2.4)	14 (4.6)	20 (6.6)	17 (5.6)	19 (6.3)	20 (6.6)	12 (4)
Tertiary	0 (0)	0 (0)	1 (0.8)	0 (0)	1 (0.8)	0 (0)	0 (0)	0 (0)	1 (0.3)	0 (0)	0 (0)	1 (0.3)
None	2 (1.6)	6 (4.8)	1 (0.8)	3 (2.4)	5 (4)	0 (0)	14 (4.6)	7 (2.3)	2 (0.7)	14 (4.6)	6 (2)	3 (1)
Adult literacy	0 (0)	0 (0)	1 (0.8)	1 (0.8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Food expenses/month												
Low (>5500 MKW)	26 (20.8)	12 (9.6)	6 (4.8)	20 (16)	20 (16)	3 (2.4)	80 (26.4)	22 (7.3)	6 (2)	48 (15.8)	47 (15.5)	13 (4.3)
Medium (5500-13500 MKW)	18 (14.4)	10 (8)	4 (3.2)	9 (7.2)	18 (14.4)	5 (4)	67 (22.1)	57 (18.8)	21 (6.9)	56 (18.5)	51 (16.8)	38 (12.5)
High (>13500 MKW)	1 (0.8)	22 (17.6)	26 (20.8)	27 (21.6)	17 (13.6)	5 (4)	15 (5)	20 (6.6)	13 (4.3)	21 (6.9)	21 (6.9)	6 (2)

Table 1.1A Socio-economic and farming characteristics of households in Nkhotakota and Lilongwe districts - *Continued*

Variable	Nkhotakota (N=125)						Lilongwe (N=303)					
	Income levels (% of total N in NKH)			***CF land allocated (% of total N in NKH)***			***Income levels (% of total N in LLW)***			***CF land allocated (% of total N in LLW)***		
	LMI (n=45)	MMI (n=44)	HMI (n=36)	SLA (n=56)	MLA (n=55)	LLA (n=13)	LMI (n=163)	MMI (n=99)	HMI (n=41)	SLA (n=125)	MLA (n=120)	LLA (n=58)
All-land size												
Small (Up to 1.6 acre)	13 (10.4)	17 (13.6)	19 (15.2)	30 (24)	18 (14.4)	1 (0.8)	59 (19.5)	22 (7.3)	10 (3.3)	58 (19.1)	32 (10.6)	1 (0.3)
Medium (1.6-2 acres)	8 (6.4)	5 (4)	4 (3.2)	6 (4.8)	6 (4.8)	5 (4)	14 (4.6)	21 (6.9)	15 (5)	10 (3.3)	11 (3.6)	29 (9.6)
Large (>2 acres)	24 (19.2)	22 (17.6)	13 (10.4)	20 (16)	31 (24.8)	7 (5.6)	90 (28.7)	56 (18.5)	14 (4.6)	57 (18.8)	77 (25.4)	26 (8.6)
Membership in local farmers association/coop/club												
Yes	37 (29.6)	37 (29.6)	28 (22.4)	48 (38.4)	43 (34.4)	10 (8)	100 (33)	81 (26.7)	25 (8.3)	81 (26.7)	85 (28.1)	40 (13.2)
No	8 (6.4)	7 (5.6)	8 (6.4)	8 (6.4)	12 (9.6)	3 (2.4)	63 (20.8)	18 (5.9)	16 (5.3)	44 (14.5)	35 (11.6)	18 (5.9)
Other membership in:												
Credit union	1 (0.8)	3 (2.4)	1 (0.8)	1 (0.8)	4 (3.2)	0 (0)	5 (1.7)	17 (5.6)	8 (2.6)	11 (3.6)	8 (2.6)	11 (3.6)
Trading union	2 (1.6)	1 (0.8)	2 (4)	4 (3.2)	1 (0.8)	0 (0)	22 (7.3)	29 (9.6)	2 (0.7)	24 (7.9)	24 (7.9)	5 (1.7)
Agricultural coop	31 (24.8)	25 (20)	14 (11.2)	30 (24)	32 (25.6)	8 (6.4)	55 (18.2)	43 (14.2)	6 (2)	41 (13.5)	50 (16.5)	13 (4.3)
NASFAM	1 (0.8)	3 (2.4)	2 (1.6)	1 (0.8)	4 (3.2)	1 (0.8)	6 (2)	9 (3)	1 (0.3)	6 (2)	5 (1.7)	5 (1.7)
FUM	6 (4.8)	14 (11.2)	23 (18.4)	32 (25.6)	10 (8)	1 (0.8)	57 (18.8)	59 (19.5)	13 (4.3)	53 (17.5)	50 (16.5)	26 (8.6)
None	10 (8)	5 (4)	3 (2.4)	3 (2.4)	11 (8.8)	3 (2.4)	63 (20.8)	15 (5)	18 (5.9)	41 (13.5)	34 (11.2)	21 (6.9)
Assistance from NGO												
Yes	12 (9.6)	24 (19.2)	18 (14.4)	19 (15.2)	27 (21.6)	7 (5.6)	43 (14.2)	60 (19.8)	15 (5)	38 (12.5)	44 (14.5)	36 (11.9)
No	6 (4.8)	6 (4.8)	11 (8.8)	16 (12.8)	6 (4.8)	1 (0.8)	52 (17.2)	24 (7.9)	11 (3.6)	42 (13.9)	36 (11.9)	9 (3)
N/A	27 (21.6)	14 (11.2)	7 (5.6)	21 (4.9)	22 (17.6)	5 (4)	68 (22.4)	14 (4.6)	15 (5)	45 (14.9)	40 (13.2)	13 (4.3)

Table 1.1A Socio-economic and farming characteristics of households in Nkhotakota and Lilongwe districts - *Continued*

Variable	Nkhotakota (n=125)						Lilongwe (N=303)					
	Income levels (% of total N in NKH)			***CF land allocated (% of total N in NKH)***			***Income levels (% of total N in LLW)***			***CF land allocated (% of total N in LLW)***		
	LMI (n=45)	MMI (n=44)	HMI (n=36)	SLA (n=56)	MLA (n=55)	LLA (n=13)	LMI (n=163)	MMI (n=99)	HMI (n=41)	SLA (n=125)	MLA (n=120)	LLA (n=58)
Assistance from Government												
Yes	2 (1.6)	5 (4)	3 (2.4)	6 (4.8)	3 (2.4)	1 (0.8)	8 (2.6)	13 (4.3)	10 (3.3)	9 (3)	8 (2.6)	14 (4.6)
No	43 (34.3)	39 (31.2)	33 (26.4)	50 (40)	52 (41.6)	12 (9.6)	148 (48.8)	86 (28.4)	29 (9.6)	114 (37.6)	106 (35)	43 (14.2)
N/A	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (2.3)	0 (0)	2 (0.7)	2 (0.7)	6 (2)	1 (0.3)
Land allocated to paprika												
Low (<10 %)	10 (8)	9 (7.2)	12 (9.6)	28 (22.4)	2 (1.6)	0 (0)	46 (15.2)	6 (29)	5 (1.7)	33 (10.9)	21 (6.9)	3 (1)
Medium (10-30%)	30 (24)	9 (7.2)	11 (8.8)	19 (15.2)	24 (19.2)	7 (5.6)	91 (30)	52 (17.2)	17 (5.6)	65 (21.5)	76 (25.1)	19 (6.3)
High (30-50% and above)	5 (4)	26 (20.8)	13 (10.4)	9 (7.2)	29 (23.2)	6 (4.8)	26 (8.6)	40 (13.2)	19 (6.3)	26 (8.6)	23 (7.6)	36 (11.9)
Dry paprika yields/season												
Low (<100 kg/season)	11 (8.8)	8 (6.4)	9 (7.2)	18 (14.4)	8 (6.4)	2 (1.6)	64 (21.1)	11 (3.6)	7 (2.3)	52 (17.2)	26 (8.6)	4 (1.3)
Medium (100-200 kg/season)	14 (11.2)	16 (12.8)	8 (6.4)	17 (13.6)	19 (15.2)	2 (1.6)	60 (19.8)	37 (12.2)	9 (3)	43 (14.2)	45 (14.9)	18 (5.9)
High (>200 kg/season)	19 (15.29	20 (16)	19 (15.2)	20 (16)	28 (22.4)	9 (7.2)	37 (12.2)	51 (16.8)	24 (7.9)	29 (9.6)	47 (15.5)	36 (11.9)
Information on paprika price:												
Before the harvest	12 (9.6)	13 (10.4)	9 (7.2)	13 (10.4)	15 (12)	6 (4.8)	53 (17.5)	40 (13.2)	11 (3.6)	51 (16.8)	40 (13.2)	13 (4.3)
After the harvest	27 (21.6)	25 (20)	21 (16.8)	36 (28.8)	30 (24)	6 (4.8)	110 (36.3)	58 (19.1)	30 (9.9)	73 (24.1)	80 (26.4)	45 (14.9)
Before or after delivery	6 (4.8)	6 (4.8)	6 (4.8)	7 (5.6)	10 (8)	1 (0.8)	0 (0)	1 (0.3)	0 (0)	1 (0.3)	0 (0)	0 (0)

Table 1.1A Socio-economic and farming characteristics of households in Nkhotakota and Lilongwe districts – *Continued*

Variable	Nkhotakota (N=125)						Lilongwe (N=303)					
	Income levels (% of total N in NKH)			***CF land allocated (% of total N in NKH)***			***Income levels (% of total N in LLW)***			***CF land allocated (% of total N in LLW)***		
	LMI (n=45)	MMI (n=44)	HMI (n=36)	SLA (n=56)	MLA (n=55)	LLA (n=13)	LMI (n=163)	MMI (n=99)	HMI (n=41)	SLA (n=125)	MLA (n=120)	LLA (n=58)
Pesticide cost/season:												
Low (<3500 MKW)	21 (16.8)	15 (12)	10 (8)	20 (16)	20 (16)	5 (4)	74 (24.4)	42 (13.9)	20 (6.6)	50 (16.5)	56 (18.5)	30 (9.9)
Medium (3500-6500 MKW)	17 (13.6)	14 (11.2)	11 (8.8)	18 (14.4)	21 (16.8)	3 (2.4)	22 (7.3)	32 (10.6)	13 (4.3)	24 (7.9)	28 (9.2)	15 (5)
High (>6500 MKW)	4 (3.2)	10 (8)	13 (10.4)	11 (8.8)	11 (8.8)	5 (4)	11 (3.6)	5 (1.7)	2 (0.7)	4 (1.3)	8 (2.6)	6 (2)
Unknown/not using it	3 (2.4)	5 (4)	2 (1.6)	7 (5.6)	3 (2.4)	0 (0)	56 (18.5)	20 (6.6)	6 (2)	47 (15.5)	28 (9.2)	7 (2.3)
Fungicide cost/season:												
Low (<3500 MKW)	21 (16.8)	12 (9.6)	8 (6.4)	15 (12)	21 (16.8)	4 (3.2)	47 (15.5)	42 (13.9)	20 (6.6)	37 (12.2)	41 (13.5)	31 (10.2)
Medium (3500-6500 MKW)	6 (4.8)	14 (11.2)	14 (11.2)	12 (9.6)	17 (13.6)	5 (4)	16 (5.3)	29 (9.6)	12 (4)	19 (6.3)	27 (8.9)	11 (3.6)
High (>6500 MKW)	3 (2.4)	7 (5.6)	10 (8)	10 (8)	7 (5.6)	3 (2.4)	6 (2)	4 (1.3)	1 (0.3)	4 (1.3)	3 (1)	4 (1.3)
Unknown/not using it	15 (12)	11 (8.8)	4 (3.2)	19 (15.2)	10 (8)	1 (0.8)	94 (31)	24 (7.9)	8 (2.6)	65 (21.5)	49 (16.2)	12 (4)
Distance from HH to collection point:												
Close (<15 min of walk)	11 (8.8)	9 (7.2)	5 (13.9)	9 (7.2)	13 (10.4)	3 (2.4)	88 (29)	54 (17.8)	21 (6.9)	69 (22.8)	68 (22.4)	26 (8.6)
Medium (15-30 min of walk)	11 (8.8)	5 (4)	7 (5.6)	8 (6.4)	11 (8.8)	3 (2.4)	28 (9.2)	21 (6.9)	18 (5.9)	23 (7.6)	21 (6.9)	23 (7.6)
Large (>30 min of walk)	23 (18.4)	30 (24)	24 (19.2)	39 (31.2)	31 (24.8)	7 (5.6)	47 (15.5)	24 (7.9)	2 (0.7)	33 (10.9)	31 (10.2)	9 (3)

Table 1.1A Socio-economic and farming characteristics of households in Nkhotakota and Lilongwe districts – *Continued*

Variable	Nkhotakota (N=125)						Lilongwe (N=303)					
	Income levels (% of total N in NKH)			***CF land allocated (% of total N in NKH)***			***Income levels (% of total N in LLW)***			***CF land allocated (% of total N in LLW)***		
	LMI (n=45)	MMI (n=44)	HMI (n=36)	SLA (n=56)	MLA (n=55)	LLA (n=13)	LMI (n=163)	MMI (n=99)	HMI (n=41)	SLA (n=125)	MLA (n=120)	LLA (n=58)
Sufficiency of income from CF												
Sufficient for the whole year	4 (3.2)	5 (4)	4 (3.2)	8 (6.4)	2 (1.6)	3 (2.4)	5 (1.7)	4 (1.3)	1 (0.3)	3 (1)	5 (1.7)	2 (0.7)
Sufficiently only partially	18 (14.4)	22 (17.6)	23 (18.4)	24 (19.2)	30 (24)	8 (6.4)	82 (27.1)	72 (23.8)	28 (9.2)	72 (23.8)	68 (22.4)	42 (13.9)
Not sufficient	23 (18.4)	17 (13.6)	9 (7.2)	24 (19.2)	23 (18.4)	2 (1.6)	76 (25.1)	23 (7.6)	12 (4)	50 (16.5)	47 (15.5)	14 (4.6)
How does participation in CF influence household												
Positively	42 (33.9)	42 (33.9)	34 (27.4)	53 (42.7)	51 (41.1)	13 (10.5)	149 (49.2)	93 (30.7)	41 (13.5)	116 (38.3)	112 (37)	55 (18.2)
Negatively	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (1.7)	2 (0.7)	0 (0)	2 (0.7)	4 (1.3)	1 (0.3)
Does not influence	1 (0.8)	1 (0.8)	1 (0.8)	0 (0)	3 (2.4)	0 (0)	3 (1)	2 (0.7)	0 (0)	4 (1.3)	0 (0)	1 (0.3)
Not known or N/A	2 (1.6)	0 (0)	1 (0.8)	3 (2.4)	0 (0)	0 (0)	6 (2)	2 (0.79)	0 (0)	3 (1)	4 (1.3)	1 (0.3)
HH play to expand contracting to other crops*												
Yes	31 (24.8)	32 (25.6)	32 (25.6)	39 (31.2)	46 (36.8)	10 (8)	60 (19.8)	58 (19.1)	24 (7.9)	116 (38.3)	51 (16.8)	34 (11.2)
No	14 (11.2)	12 (9.6)	4 (3.2)	17 (13.6)	9 (7.2)	3 (2.4)	102 (33.7)	39 (12.8)	17 (5.6)	3 (1)	66 (21.8)	24 (7.9)
Direct communication												
With the contractor	4 (3.2)	11 (8.8)	2 (1.6)	4 (3.2)	11 (8.8)	2 (1.6)	47 (15.5)	43 (14.2)	15 (5)	29 (9.6)	49 (16.2)	27 (8.9)
With the extension worker	39 (31.2)	33 (26.4)	33 (26.4)	50 (40)	44 (35.2)	10 (8)	141 (46.5)	91 (30)	36 (11.9)	115 (38)	102 (33.7)	51 (16.8)

Note: * nine responses missing in the category CF land allocated in Lilongwe.

Table 1.2A Side-selling in Nkhotakota and Lilongwe districts

Variable	Nkhotakota (N=125)						Lilongwe (N=303)					
	Income levels (% of total N in NKH)			***CF land allocated (% of total N in NKH)***			***Income levels (% of total N in LLW)***			***CF land allocated (% of total N in LLW)***		
	LMI (n=45)	MMI (n=44)	HMI (n=36)	SLA (n=56)	MLA (n=55)	LLA (n=13)	LMI (n=163)	MMI (n=99)	HMI (n=41)	SLA (n=125)	MLA (n=120)	LLA (n=58)
Household side-selling paprika:												
Yes	18 (14.4)	27 (21.6)	20 (16)	35 (28)	29 (23.2)	1 (0.8)	37 (12.2)	41 (13.5)	15 (5)	35 (11.6)	32 (10.6)	26 (8.6)
No	27 (21.6)	17 (13.6)	16 (12.8)	21 (16.8)	26 (20.8)	12 (9.6)	126 (41.6)	58 (19.1)	26 (8.6)	90 (29.7)	88 (29)	32 (10.6)
Proportion of paprika sold to the contractor:												
Low (Up to 30%)	6 (4.8)	3 (2.4)	13 (10.4)	14 (11.2)	4 (3.2)	4 (3.2)	32 (10.6)	10 (3.3)	3 (1)	11 (3.6)	29 (9.6)	5 (1.7)
Medium (30-70%)	9 (7.2)	9 (7.2)	4 (3.2)	5 (4)	14 (11.2)	3 (2.4)	11 (3.6)	24 (7.9)	2 (0.7)	11 (3.6)	20 (6.6)	6 (2)
Large (71-100%)	28 (22.4)	31 (24.8)	19 (15.2)	34 (27.2)	37 (29.6)	6 (4.8)	116 (38.3)	58 (19.1)	35 (11.6)	101 (33.3)	69 (22.8)	39 (12.9)
Unknown	2 (1.6)	1 (0.8)	0 (0)	3 (2.4)	0 (0)	0 (0)	4 (1.3)	7 (2.3)	1 (0.3)	2 (0.7)	2 (0.7)	8 (2.6)

Table 1.3A Results from Kendall's tau-b test for association between two variables on ordinal scale

Two variables	τ_b Correlation Coefficient	*p*-value
Access to inputs x HH monthly income	-0.268	0.000
Access to inputs x HH costs for fungicides/season	0.283	0.000
Access to inputs x Size of CF land	-0.282	0.000
Access to credit x Size of CF land	-0.311	0.000
Access to credit x HH costs for fertilizers/season	0.131	0.002
Access to credit x HH costs for pesticides/season	0.146	0.001
Access to credit x HH costs for fungicides/season	0.175	0.000

Table 1.4A Results from Kendall's tau-b test for association between two variables on ordinal scale

Two variables	τ_b Correlation Coefficient	*p*-value
Satisfaction with the contractor x Satisfaction with farmers' institution	0.349	0.000
Satisfaction with the contractor x Proportions of CF crop sold	0.115	0.009

Table 1.5A Triangulation of the interview data related to Challenge 1

Challenge 1	Level 1: Smallholders	Level 2: Company	Level 3: Chain's environment
Poor input provision	'[Our] neighbours see [our contract farming] as a waste of time, because no inputs or loans are given, as compared to other crops like tobacco.' *Focus group interview no. 3, Chawatha area, Lilongwe district, 2015* 'We negotiate to [get] loan on input; this can be fertilizers, seeds, sprayers, [and] chemicals - this would help us. Right now we don't get loan.' *Focus group interview no. 6, Nkhoma area, Lilongwe district, 2015* 'One of the most important things to be included [in the contract] is the farm input loan.' *Focus group interview no. 8, Nkhoma area, Lilongwe district, 2015*	'But the issue is that as [Company], we cannot provide inputs to the farmers on credit. Because we had a bad experience in the past when we were giving farmers inputs on credit, they never repaired the loan. Actually, what happens is the more you give inputs to the farmers, the more they will carry what we call side selling.' *Company representatives, joint semi-structured interview with two field officers, Lilongwe, 2015*	'Small farmers are economically disloyal i.e. they follow price irrespective of who has supplied the seed to them. The consequence of this is that a purchaser will supply seed (relatively low cost) but will not supply the other costly inputs needed (fertilizers, pesticides, herbicides etc.) as when paprika is ready the [smallholder] will sell for the highest price irrespective of who has supplied inputs.' *Processor from South Africa, email correspondence, 2015*
Previous experience	'The [Company] says [they] cannot give out loans because they go by a history that Malawian farmers do not pay back loans.' *Focus group interview no. 4, Chiputu area, Lilongwe district, 2015*	'I mean, if I gave them four bags of fertilizer and a seed, and said I'll come back and buy from you at the end of the season, they'll probably knock off the fertilizer and we cannot buy [the crop].' *Company's CEO, semi-structured interview, Lilongwe, 2015*	'[Smallholders] want [1] as much for free as possible, [2] long pay back times, [3] clear information of how much will be bought, when and for what price.' *Consultant no. 1, email correspondence, 2014* 'The [company X] experience actually was the bad one unfortunately. The farmers talk about: "Oh, [company X], the cheaters!" It could have been more of a perception than anything, but that's how the farmers felt about it because they just felt they were not given the price that they promised at the beginning.' *Representative from NASFAM, semi-structured interview, Lilongwe, 2014*

Table 1.5A Triangulation of the interview data related to Challenge 1 - *Continued*

Challenge 1	Level 1: Smallholders	Level 2: Company	Level 3: Chain's environment
Low level of trust	'We don't trust the company and that's why we sale to vendors. [Vendors] offer good prices on paprika. Imagine, they don't even grade the product; they buy it at higher price than [the Company]. How could we trust the [Company] when today they tell us the crop is at 500 MKW and tomorrow at 300 MKW? The same crop. It's not fair.' *Focus group interview no. 6, Nkhoma area, Lilongwe district, 2015*	'Umm...I guess by my answers I don't trust [smallholders]. No, I don't trust them. Because they would go and sell to someone else, and run away from me. So, umm...I don't think...No! They haven't done anything to demonstrate we should trust.' *Company's CEO, semi-structured interview, Lilongwe, 2015*	'I can say farmers are my friends. Yes, yes, yes I trust them. And they trust me, also. Because, with me I'm so open. I say: "We can use your scale or we can use my scale".' Vendor no. 1, semi-structured interview, Lilongwe, 2015 'But as for the private companies, I believe the trust is not that high.' *Representative from Concern Universal, semi-structured interview, Nkhotakota, 2014*
Contract design	'We are not communicated to in advance of the expected produce prices.' *Focus group interview no. 1, Kamparilo and Kalilani area, Nkhotakota district, 2014* 'The contractor should sit down with the farmers and set prices for the produce beforehand.' *Focus group interview no. 2, Limbikani club, Nhkotakota district, 2014*	[The topic did not appear during the conversation in a form that adds to the triangulation purpose.]	'There are some facts that are hidden between the players.' *Representative from the Ministry, semi-structured interview, Lilongwe, 2015* 'They [company in the contract] can't say they will be paying the farmers within two weeks. Already that's a problem! The farmers they want cash! The vendors are already out there and they are paying cash. I mean, waiting for two weeks? A smallholder farmer? It doesn't carry a weigh. [This] is already putting the farmer off. You cannot go by this.' *Representative from TLC, semi-structured interview, Lilongwe, 2015*

Table 1.5A Triangulation of the interview data related to Challenge 1 - *Continued*

Challenge 1	Level 1: Smallholders	Level 2: Company	Level 3: Chain's environment
Missing legal framework/strategy	One participant suggested that there needs to be more involvement by the government or other organization to break existing private monopoly. Now only one player, Exagris, is the sole buyer and provider of seed so farmers have no choice. *Assistant's notes from the focus group interview no. 6, Nkhoma area, Lilongwe district, 2015* 'If the government would come in and help with marketing, it would help us a lot.' *Focus group interview no. 8, Nkhoma area, Lilongwe district, 2015*	[The topic did not appear during the conversation in a form that adds to the triangulation purpose.]	'Yeah, so we do not have the Contract Farming Strategy in place right now.' *Representative from CISANET, semi-structured interview, Lilongwe, 2015.* 'Unfortunately, we don't have the right legal framework, the legal instruments to support contract farming.' *Representative from FUM, semi-structured interview, Lilongwe, 2015* 'When a dispute erupts between the contractor and the contracted, or the buyer and maybe the farmer, nobody knows where to go because there are no legal instruments to guide them.' *Representative from the Ministry, semi-structured interview, Lilongwe, 2015* 'And also…I think one of the biggest challenges is that as a country we don't really have like a contract farming or contract marketing strategy. So, there's no guidance on this how it's done.' *Representative from NASFAM, semi-structured interview, Lilongwe, 2014*

Table 1.6A Triangulation of the interview data related to Challenge 2

Challenge 2	Level 1: Smallholders	Level 2: Company	Level 3: Chain's environment
No bargaining	'We don't have bargaining powers. Only imagine, the contract is drafted by [Company]. We just sign. Most of us eve don't understand what is [in] the contract. And when it comes to price, we don't have any say. [Company] can come and tell us that the paprika will be at this price without [our agreement] on the price. It is very difficult for us to bargain for anything with a company that has no communication [with us].' *Focus group interview no. 7, Nkhoma area, Lilongwe district, 2015* '[We] engage into discussion as per every grade produced. Contractor does us good because they [...] involve us in pricing.' *Focus group interview no. 3, Chawatha area, Lilongwe district, 2015*	'And they are selling kilograms, like 5 kg, 10 kg. And they don't have any [...] arguments for bargaining. We want as much as possible to work with groups of farmers. There are groups that will produce a substantial volume. We have always pushed them to [get] into organized groups where they can sell such a volume at the right time, and they can bargain.' *Company representatives, joint semi-structured interview with two field officers, Lilongwe, 2015*	'And the farmers, too, they are not involved in the price-making of the [contract]...[Company] just go[es]: 'We will buy this paprika this season at this price'. Vendors are very friendly with the farmers [compared to] the company, because they can discuss about the price. The company has fixed price.' *Vendor no. 2, semi-structured interview, Lilongwe, 2015*
Non-transparent grading system	'On grading, [Company] is the one who grade[s] the product. We don't say anything on this issue. We tried to negotiate, but we failed.' *Focus group interview no. 6, Nkhoma area, Lilongwe district, 2015*	'[...] because grading is subjective, I'd say our grading is subjective. Is what you see on that day, is what the buyer see at the [spot]. You see, we are targeting international market, they have their own standards. We can't just go in the field and buy....and buy any trash.' *Company representatives, joint semi-structured interview with two field officers, Lilongwe, 2015*	'But the companies normally have four grades, so grade A, B, C and D. So, the farmers hate that. They hate. Because there's no way you can differentiate [...] between grade A and grade B. What I can see as grade A, in another area it would not be grade A. So, yeah, they are visuals. I don't take advantage of that. I just buy in two grades: grade A and grade B.' *Vendor no. 1, semi-structured interview, Lilongwe, 2015*

Table 1.7A Triangulation of the interview data related to Challenge 3

Challenge 3	Level 1: Smallholders	Level 2: Company	Level 3: Chain's environment
Low price	'However, it is the contractor that benefits most because they [buy] from us at a lower price, whilst they sell at a high price.' *Focus group interview no. 1, Kamparilo and Kalilani area, Nkhotakota district, 2014* 'We are not satisfied with the contract due to the fact that the price is low, [so] we sale to vendors. You can't expect from us to spend so much and sale product at low price.' *Focus group interview no. 7, Nkhoma area, Lilongwe district, 2015*	'[...] we also look at the at the performance of the Kwacha at the time that we open the market, based on the dollar price 'cause we are given a dollar price. So we [are] prepared with what the Kwacha is doing at that time. You see, it's a two way. While the Kwacha is now gaining, [...] what should happen is that the farmer will be paid less in Kwachas, because of the gain of Kwacha. And now, what will happen is - the farmer is like, he's losing, he's been affected.' *Company representatives, joint semi-structured interview with two field officers, Lilongwe, 2015*	'If [Company] say[s] we buy the paprika at 600 MKW per kg, then I say: 'Okay, I'll buy this paprika at 900 MKW'. So, I can manage even if the company is buying at MKW 600. I can even buy at MKW 1,000, and sell at MKW 1,500. Still, MKW 500 is enough profit for me.' *Vendor no. 1, semi-structured interview, Lilongwe, 2015* 'But normally it's around 500 MKW [and] above. Yeah, so if I want to have more paprika from the farmers, if I want to beat my competitors, I have to put 600 MKW! If it's 1,000 MKW, I have to put 1,200 MKW...or even 1,500 MKW, so that I should have the paprika.' *Vendor no. 3, semi-structured interview, Lilongwe, 2015*
Small quantities sold to the contractor	Another farmer said he was initially growing tomatoes and then averted to paprika. This last growing year he produced over 500 kg and out of that, he sold 196 kg to [Company] whilst 304 kg was sold to vendors who offered higher attractive prices. This year he is expecting a revenue more than MKW 500,000 because he harvested more due to extension service received from [Company]. *Assistant's notes from the focus group interview no. 2, Limbikani club, Nhkotakota district, 2014*	Officer 1: 'I've a very practical example. One of the farmer around where we went, he sold almost 80% or 90% of his paprika [to vendors] and he said – "No, my friend, [...] I've kept this for you". How can you say like that?' Officer 2: 'So, he only gave you 10%?' Officer 1: 'Yeah.' (*Silence for a while*.) *Company representatives, joint semi-structured interview with two field officers, Lilongwe, 2015*	'[Vendors] can buy at relatively high prices as they have not taken any input risk - however they only have cash to buy relatively small quantities. [Company] is therefore trying to buy hundreds of tonnes but are competing against a guy who is buying 5 tonnes at a 10% premium. We cannot afford to buy large quantities at above international market prices as our end product [...] is an internationally priced commodity. [Company] will therefore withdraw from the market as their customer will not pay the inflated price.' *Processor from South Africa, email correspondence, 2015*

Table 1.7A Triangulation of the interview data related to Challenge 3 - *Continued*

Challenge 3	Level 1: Smallholders	Level 2: Company	Level 3: Chain's environment
Misunderstanding of contract principles	'Why should we sell to [company]? The contract doesn't limit us to sell to [company]. It's an open market and we can sell to anyone.' *Focus group interview no. 8, Nkhoma area, Lilongwe district, 2015* 'And when we realize that the prices are lower than what [company] promised us, we will engage into a discussion with them or just sell to vendors.' *Focus group interview no. 3, Chawatha area, Lilongwe district, 2015*	'Well, [...] it's also to do with history - I mean every time there's a change in government, then they can write off any previous obligations of the previous governments, and that's gone on for many years. So, there's that culture of, you know, expecting things to be written off for convenience.' *Company's Projects Manager, semi-structured interview, Lilongwe, 2015*	'However, understanding of contracts is not that good among the majority of most farmers. They tend to be carried away in case the prices improve so much such that they dishonour supply terms.' *Consultant no. 2, email correspondence, 2014* 'They don't [understand the contract] because there are contracts which are written in English, and the other contracts are written in Chichewa. But if you translate the two, [you] find that they are too different in meanings. So the farmers have just being fooled.' *Vendor no. 1, semi-structured interview, Lilongwe, 2015* 'The companies should be transparent and accountable in their dealings with the farmers. And most companies are not. They do not clearly explain to the farmers the implications of their commitments. And the farmers will not understand, because most of them are illiterate. And companies take advantage of that.' *Representative from the University, Lilongwe, 2014*
Side selling	'But for prices, vendors are good and with [company's] prices we fail to see the future of the crop production.' *Focus group interview no. 2, Limbikani club, Nkhotakota area, 2014* 'This is why we sale to vendors: because vendors do not grade the paprika and the prices are high.' *Focus group interview no. 7, Nkhoma area, Lilongwe district, 2015*	'Because what [smallholders] normally do is that they know that there's [Company], but they also at the same time know that there's the vendor. And if the vendor doesn't buy at the higher price, which they normally offer, then [smallholders] will sell the paprika to [Company].' *Company representatives, joint semi-structured interview with two field officers, Lilongwe, 2015*	'You buy from [small-scale farmers'] doorsteps. You give them cash; there is no need of transportation. 'Cause those [small-scale farmers] - they need money quickly. And they prefer to get cash.' *Vendor no. 3, semi-structured interview, Lilongwe, 2015* 'But also what induces side-selling is either the price that was offered is low or maybe this guy is delaying to come and get the commodity and the farmer is desperate for money. So, what does he do? Side-sell! It's quite common.' *Representative from the University, semi-structured interview, Lilongwe, 2014*

Table 1.7A Triangulation of the interview data related to Challenge 3 - *Continued*

Challenge 3	Level 1: Smallholders	Level 2: Company	Level 3: Chain's environment
Market conditions	'Let other organisations also come in with their contracts, so that there [will] be a competition.' *Focus group interviews no. 2, Limbikani club, Nhkotakota district, 2014* 'More organisations should be involved to break the monopoly seal.' *Focus group interview no. 2, Limbikani club, Nkhotakota district, 2014*	'And it's an export crop, so you'll have to really see what the exchange rate is at the time and what the competition is paying. Chinese [paprika] is much cheaper than our crop. Then our buyers will say: Well, look this is, well we can get it cheaper from China, so you'll have to drop your price a bit. And that will squeeze our margin, [...] and we'd have to drop the price of the farmers as well. But the thing is that you have to be a bit careful, because [...] everyone waits for us to give a price, and then they just add 10 MKW.' *Company's Projects Manager, semi-structured interview, Lilongwe, 2015*	'World prices are dominated by Chinese who produce many times more than any other country. The Chinese [...] price for a season hits the market in December/January. We then need to quote our customer an oleoresin paprika price in February/March and this in turn determines the price we can pay [Company].' *Processor from South Africa, email correspondence, 2015* 'There's plenty of market for paprika. So you just need to have enough quantities to be able to sell to the customers.' *Vendor no. 2, semi-structured interview, Lilongwe, 2015*

Table 1.8A Results from Kendall's W test with company included

Ranks	
	Mean Rank
A	6.14
B	7.29
C	4.00
D	**1.86**
E	7.43
F	5.57
G	5.71
H	5.29
I	7.57
J	6.57
K	8.57
Test Statistics	
N	7
Kendall's W[a]	**0.319**
Chi-Square	22.312
df	10
Asymp. Sig.	**0.014**
a. Kendall's Coefficient of Concordance	

Table 1.9A Results from Kendall's W test without company

Ranks	
	Mean Rank
A	6.67
B	7.83
C	4.33
D	**2.00**
E	7.33
F	4.67
G	5.17
H	5.33
I	7.67
J	6.67
K	8.33
Test Statistics	
N	6
Kendall's W[a]	**0.327**
Chi-Square	19.606
df	10
Asymp. Sig.	**0.033**
a. Kendall's Coefficient of Concordance	

Appendix 1 Codebooks[1] for Qualitative Data

Codebook 1: Theme **'Dynamics in the Paprika Supply Chain'**

Table 1.1 Definition of general codes

General categories	Definition of the code in the context
• Roles and responsibilities • Relations • Background	• Roles and responsibilities that small farmers/company/enabling environment play in paprika supply chain. • Relations that small farmers/company/enabling environment have in paprika supply chain with other players. • When did the company start contracting with small farmers and what are company's main activities, values and motivations?

Table 1.2 Level 2: Company (semi-structured interviews)

General categories	Identified codes under each category
• Roles and responsibilities	• A buyer; formulating and offering the contract, screening potential suppliers, buying the produce, providing the seed on the cash basis, providing extension services as training on agricultural practices, grading, selling the produce to the next buyer, international rule of the game
• Background	• Activities, crops, end market, establishing the company, estate and suppliers balance, further market in South Africa, growing paprika and groundnuts together, main motivation for paprika business, number of small farmers in supplying paprika, private investment setup, social responsibility meaning, start of contracting for paprika, starting paprika business in Malawi, the importance of paprika for the company, pricing, extension services provided

Table 1.3 Level 3: Enabling environment (semi-structured interviews and email correspondence)

General category	Identified codes under the category
• Roles and responsibilities	• Linking small farmers with markets, advocating for policies, representing the voice of small farmers, facilitating contract farming, developing and revising legal framework for contract farming, promoting farmer groups, providing market for some small farmers' crops, providing training to small farmers, mobilising small farmers into cooperatives, promoting value addition for farmers' products, scrutinising contracts, collaborating on Contract Farming Strategy, enhancing agricultural productivity, improving small farmers' livelihoods, facilitating dialogues between stakeholders, consulting, promoting farmers' organisations, providing inputs and soft loans, encouraging farmers to use sustainable technology, providing guidance based on empirical evidence

[1]All *Codebooks* in this study followed the principle where numerous codes make one category and few categories make one theme (Saldaňa, 2009, p. 8-9).

Table 1.4 Relations for all levels

General category	Identified codes under the category
• Relations	• Selling, buying, co-operating, regulating, supplying, contracting, trading, demanding, joining, advocating, supporting, negotiating, informing and recommending, linking and building capacity

Codebook 2: Theme **'Contract Farming and Its Influence on Small Farmers' Livelihood**

Table 2.1 Definition of general codes

General categories	Definition of the code
• Farmers' preferences for the contract • Cost-benefit analysis • Perception of CF in the community • Future plans • Farming and marketing practices	• The most important parts of the contract. Are there any changes needed in the contract? • The main costs in the paprika production + the price received + an average yield + the final profit. • How do small farmers perceive contracting in their community? • Consideration to have the contract for the paprika in the future. Under which conditions? • Farming and marketing practices involved in the paprika cultivation according to the month in the year.

Table 2.2 Codes identified at the level of small farmers

General categories	Identified codes under each category
• Supply chain	• Agro-dealers, company, company's extension officers, vendors, Government, hired labourers
• Farmers' motivation to enter contracts	• Easy to acquire inputs: seeds, fertilizers and chemicals, access to free extension services, market availabiility, minimum productions costs for cultivation paprika, no negative impacts for the environment while cultivating paprika
• Farmers' preferences for the contract	• Guaranteed market, fertilizers, chemicals, transport, access to inputs, good prices, grading, extension services, quality standards
• Cost-benefit analysis	• Equipment: sprayer, hoe, water cane; Land: nursery, land; Seeds; Fertilizers: D-compound, CAN, NPK; Chemicals: Diphenyl, Copper, Asphalt; Labour: ridging, weeding, land hallowing, harvesting; Transport: ox-cart; Market price: grade A and grade B; Production costs; Yield; Revenue, Profit
• Perception of CF in the community	• Satisfaction with contract conditions, positive side of the contract, impact of contracting on livelihoods, reasons why neighbouring farmers are not under the contract

Table 2.2 Codes identified at the level of small farmers - *Continued*

General categories	Identified codes under each category
• Future plans	• Readiness to continue under the contract, conditions that the company needs to change or add in order to make contracts more attractive
• Farming and marketing practices	• Nursery establishment and management, seed sowing and management, land preparation, transplanting, using fertilizers and chemicals, field management, harvesting and drying, storage and marketing

Codebook 3: Theme '**Key Challenges in Contract Farming**'

Table 3.1 Definition of all codes

General initial categories	Definition of the code in the context
• Bargaining	• Possibility to negotiate contract terms (e.g. price, grades or inputs provided).
• Breach of contract	• Violation of the contract term (e.g. side selling, late delivery or late purchase).
• CF perception in the community: challenges that farmers face and good side of the contract	• How does the rural community of small farmers under paprika contract perceive challenges and benefits of contracting?
• Challenges	• Issues found in the contractual relation.
• Communication	• Communication between the key players in the supply chain: frequency and quality.
• Farmers' preferences for the contract design	• Contract terms that small farmers prefer to see in the contract.
• Good side of the contract	• Benefits of the contract.
• Grades	• Evaluation of the quality of paprika through determined set of rules or guidelines.
• Guidelines on chemicals	• Set of rules on applying chemicals.
• Input provision	• Seeds, fertilizers, pesticides, chemicals and extension services provided as a part of the contract.
• Legal framework	• Official legal framework or strategy from the Government that defines contract farming relations.
• More definition in the contract	• What should be included in the contract?
• Payment for farmers	• Terms that describe how will small farmers be paid for delivering the paprika under agreed conditions.
• Pricing in the contract	• The price paid to small farmers for their paprika.
• Quantity	• Volumes of paprika expected to be delivered by small farmers.
• Side-selling and vendors	• Selling the paprika outside of the contract to an informal channel (vendors).
• Trust	• The level of confidence or certainty that the other party of the contract will fulfil its responsibilities.
• Understanding the contract	• The extent of comprehension of agreed terms and their implications.
• Volatile market conditions	• Uncertain conditions regarding the price and demand for paprika on the international market.

Table 3.2 Coding for the level 1: Small farmers (focus group interviews)

First cycle codes	Second cycle codes
• CF perception in the community: challenges that farmers face and good side of the contract • Communication, information and negotiation • Farmers' preferences for the contract design	• Contract design • Low level of trust • Low price • Misunderstanding contract principle • Negative previous experience • No bargaining • Non-transparent grading system • Poor input provision • Side-selling

Table 3.3 Coding for the level 2: Company (semi-structured interviews)

First cycle codes	Second cycle codes
• Bargaining • Breach of contract • Challenges • Communication • Company's background • Grades • Guidelines regarding chemicals • Input provision • Payment for farmers • Previous experience • Pricing in the contract • Quantity • Side selling and vendors • Trust • Understanding the contract • Volatile market conditions	• Low level of trust • Low price • Misunderstanding of contract principle • Negative previous experience • No bargaining • Non-transparent grading system • Poor input provision • Side selling • Small quantities sold to the contractor • Volatile market conditions

Table 3.4 Coding for the level 3: Enabling environment (semi-structured interviews and email correspondence)

First cycle codes	Second cycle codes
• Challenges • Company's side • Farmers' preferences • Good side of the contract • Input provision • Legal framework • More definition in the contract • Previous experience • Pricing in the contract • Side selling and vendors • Trust • Understanding the contract	• Contract design • Low level of trust • Low price • Missing legal framework/strategy • Misunderstanding of contract principle • Negative previous experience • Poor input provision • Side selling

Codebook 4: Theme '**Contract Design**'

Table 4.1 Developed template with audit trail for inductive and deductive coding

Categories	Definition of the code under each category
• Parties to the contract**	• Group or individual entity entering into an agreement and accepting contract terms and conditions. **
• Preamble*	• Underlying reasons for contracting and the nature of the relationship between parties.*
• Duration**	• An indication of the dates of signing the contract and the exact duration of the contract. It might indicate if and how the contract can be renewed. **
• Input provision*	• Provision of inputs to cultivate or deliver the crop (e.g. seeds, fertilizers, bags).*
• Quantity*	• An explicit statement of the production volumes that the small producer has to deliver to the buyer or the buyer is obliged to buy from the small producer. Can be determined explicitly, as minimum quantity, as a quota, or variable quantity depending on the buyer's orders. **
• Delivery conditions**	• Indicated the time and form of the delivery. **
• Grades*	• The explicit specification of the grades for the product; the description of quality levels for the product.*
• Price*	• The precise amount or system to determine final amount to be paid to small producers, taking into consideration variations in quality of the product and financial obligations, such as loans for inputs and services received.**
• Payment*	• The procedure and timing for paying small producers. **
• Training*	• The obligatory or free instructions provided by the buyer or third party on agricultural practices to improve the quality of the final produce. **
• Quality failure**	• An indication of the remedy/compensation if one or some of the contract terms and conditions are not completed.*
• Breach**	• Deliberate and conscious violation of agreed terms and conditions coming from either party. It can result in contract termination or compensation procedures. **
• Liabilities*	• Legal responsibility for acts or omissions. **
• Termination**	• Conditions under which either party has the right to terminate the contract.*
• Disputes**	• The case of conflict between the parties regarding the definition or performance of agreed terms and conditions. It might be settled amicably, through mediation, arbitration or courts. **
• Force majeure*	• A provision that frees both parties from the obligation if an extraordinary event occurs. An extraordinary event includes unforeseeable and unavoidable situation, which is not the result of party's actions. **
• Applicable law**	• National or regional law competent for enforcing contractual arrangements, and especially applicable in the case of possible disputes.*
• Signatory*	• The warranty that the person signing the contract is an appropriate one and has the authority to execute the contract.*

Note: * = originally in inductive coding, ** = changed/improved after applying deductive coding

Codebook 5: Theme '**Options for Improving Contracting Conditions**'

Table 5.1 Definition of general codes

General categories	Definition of the code
• What • How • Who	• What should be done to improve contracting? • How should options to improve contracting be implemented? • Who should implement identified options?

Table 5.2 Codes identified at all three levels

General categories	Identified codes under each category
• What	• Advance the contract design • Decrease market volatility • Eliminate side selling • Improve enforcement of the contract • Improve infrastructure • Improve input provision • Improve pricing • Improve understanding of contract principle • Increase knowledge on grading system • Increase participation of small farmers in contract formulation • Increase traded volumes • Increase trust levels
• How	• Strengthen small farmers in paprika sector • Acting in a good faith • Allowing small farmers to be present, discuss and agree on the contract design • Appointing mediators and/or arbitrators who can direct farmers in legal matter • Assuring farmers that their crop will be purchased • Calculating costs of living and then formulating the price • Calculating gross margins and the cost of inputs to encourage input provision • Clearly defining the price in the contract • Early purchase by the company • Educating farmers on grading rules and procedures • Enabling clubs to have revolving funds that can be used if farmers want to sell smaller quantities and then accumulated quantities are sold to the company

Table 5.2 Codes identified at all three levels - *Continued*

General categories	Identified codes under each category
• How	• Encouraging association or group members to sell to the contractor • Encouraging/allowing other buyers to enter paprika market • Ensuring minimum guaranteed price in the contract • Establishing and maintaining communication between parties • Establishing revolving funds • Fnalising contract farming strategy and developing legal/institutional framework • Defining minimum volumes in the contract based on farmers' average production • Developing farmers' associations or groups • Honouring what was promised from both sides • Improving dialogue between the company and small farmers • Increasing company's presence in the local area • Investing in warehouse and irrigation system • Knowing expectations from farmers • Long-term investment in making a relationship better • Making contract terms and conditions clear • Mutually agreeing on the price • Organising selling through farmers' association and not individually • Paying in cash immediately after the purchase of paprika • Providing accurate information • Providing bonuses or transportation for excess volumes delivered • Providing complete contract, especially with defined clauses on the price, what to do in the case of breach and dispute mechanism • Providing loans to farmers' associations • Providing sufficient seeds, fertilizers and chemicals to farmers' association in time • Providing win-win contract • Regulating contracts through legal framework • Introducing innovative selling methods (price information and selling offer by sms) • Rewarding loyal farmers with inputs to encourage them
• Who	• Small farmers • Farmers' associations or unions • Company • Government • NGOs • Other buyers

Appendix 2 Sample of the Household Questionnaire

ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

HOUSEHOLD

Contract farming and Supply Chain Efficiency for improved market access

Malawi, 2014 and 2015

Questionnaire /__/__/__/ out of /__/__/__/

CODE

District, parish: /__/__/

Interviewer's name and ID: _____ /__/__/__/__/

Status: (1 = completed, 2 = partially completed, 3 = rejected/withdrawn) /_____/

Date: /___/___/2015/

Observations during the survey:

*(Record general notes on the interview and any special information that occurs; **to report**)*

INFORMED CONSENT – explanation *(Must be read or presented to <u>every respondent</u> by enumerator)*

<u>Purpose of the study</u> As part of the requirements for fulfillment of the PhD degree at University College Cork (further referred to as UCC), I am carrying out a research study. The research is concerned with the contracts, supply chain and market access.

<u>Procedure</u> The study involves filling out the questionnaire by a trained enumerator. The time needed for completing the questionnaire is approximately 30 minutes.

<u>Selection</u> You have been pre-selected and hereby asked to participate because you are important source of information for the study.

<u>Participation</u> Your participation is voluntary. You have the right to withdraw before the study commences even if you agreed to participate. You have the right to discontinue after data collection has started. You are allowed to withdraw within two weeks of participation and ask for your data to be destroyed.

<u>Signing the consent form</u> If you decide to participate, you will be asked to sign the consent form.

<u>Anonymity</u> My responsibility as a researcher is to ensure that no clues to your identity appear in the thesis. Any extracts from what you say that are quoted in the thesis will be entirely anonymous.

<u>Confidentiality from third parties</u> The data will be kept confidential for the duration of the study. On completion of the thesis, data will be kept complete, accurate and in shape for only official retrospective audit. Storage is envisaged in paper (under locked folders) and electronic form (with password).

<u>Study results</u> The results will be presented in the thesis. Official supervisors, internal examiners and external examiners will see the thesis. Future students on the course may read the thesis. The research may be published in a research journal.

<u>Risks</u> I don't envisage any negative consequences for you in taking part in the research. It is possible that talking about some aspects in this way may cause some distress or inconvenience. You have the right to withhold the information.

<u>Approval</u> Social Research Ethics Committee at UCC approved this study before it was commenced.

If you need any further information, please contact me personally or my colleagues in the area at:

Lana Repar Email: l.repar@umail.ucc.ie Mobile: +353 85 101 26 18

Local address during the study: **Contact (local number):**

Lilongwe, 43/241/2 Area 43 099 1019 735

INFORMED CONSENT FORM signed by participant *(Must be read or presented to <u>every respondent</u> by enumerator)*

I_____agree to participate in this research study.

The purpose and nature of the study has been explained to me in writing. I am participating voluntarily.

I understand that I can withdraw from the study, without repercussions, at any time, whether before it starts or while I am participating. I understand that I can withdraw permission to use the data within two weeks of the participation in the questionnaire, in which case the material will be deleted. I understand that anonymity will be ensured in the write-up by disguising my identity. I understand that disguised extracts from my questionnaire may be quoted in the thesis and any subsequent publications if I give permission below: (*Please tick <u>one</u> of the boxes below*)

I agree to quotation/publication of extracts from my questionnaire. ☐

I do not agree to quotation/publication of extracts from my questionnaire. ☐

Signed _____

(Witnessed by enumerator .....) Date /___/___/2014/2015

Household characteristics

1. What is your age group?

☐ Less than 26 ☐ 26 - 30 ☐ 31 - 40

☐ 41 - 50 ☐ 50 and above ☐ Don't know

2. Gender:

☐ Male ☐ Female

3. How many members are currently living in your household?

☐ Total of: _____

4. What is your education level?

☐ Primary ☐ Secondary ☐ Tertiary

☐ None ☐ Adult literacy

5. How many years of experience do you have in cultivating Paprika?

☐ Less than 1 year ☐ 1 - 3 ☐ 4 - 5 ☐ 6 - 7

☐ 8 - 9 ☐ 10 - 11 ☐ 12 - 13 ☐ 14 and more

6. What is the main occupation of your household?

☐ Farming: crops ☐ Livestock ☐ Mixed (crops + livestock) ☐ Other

7. What is the regular source of income for your household (tick all that applies)?

☐ Contract farming ☐ Wages from regular work ☐ Wages from part-time work

☐ Trade ☐ Grant and remittances ☐ Investments and savings

8. What is the importance of listed income sources for your household?

☐ Contract farming: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Wages (regular work): *important*	*Not important*	1	2	3	4	5	*Very*
☐ Wages (part-time work): *important*	*Not important*	1	2	3	4	5	*Very*
☐ Trade: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Grant and remittances: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Investments and savings: *important*	*Not important*	1	2	3	4	5	*Very*

9. What is the monthly income of your household (all sources included, in MKW)**?**

☐ Less than 10 400	☐ 10 401 - 20 800	☐ 20 801 - 31 200	☐ 31 201 - 41 600
☐ 41 601 - 52 000	☐ 52 001 - 62 400	☐ 62 401 - 72 800	☐ 72 801 and above

Contract details

10. Are you engaged in contract farming?

☐ Yes ☐ No

11. What crops are you cultivating under the contract (tick all that applies)**?**

☐ Paprika	☐ Bird's Eye Chili	☐ Tobacco	☐ Cotton
☐ Soya bean	☐ Maize	☐ Groundnut	☐ Other:

12. Who is involved in contract farming activities in your household (tick all that applies)**?**

☐ Household head	☐ Head and wife/husband	☐ Males in household	☐ Females in household
☐ All members			

13. Do you hire any extra labour for farming activities related to Paprika?

☐ Yes ☐ No

Motivation and satisfaction

14. Please rate how important for you are stated reasons for involvement in contract farming.

☐ Stable price: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Access to inputs: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Stable income: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Access to information: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Guaranteed market: *important*	*Not important*	1	2	3	4	5	*Very*
☐ Access to credit: *important*	*Not important*	1	2	3	4	5	*Very*

15. Have you ever change your contractor?

☐ Yes ☐ No

16. If yes, how many times have you changed contractor since you entered contract farming?

☐ Never ☐ 1 - 2 times ☐ 3 - 4 times ☐ 5 - 6 times

17. Please rate your relationship with your current contractor.

☐ Relationship: *satisfying*	*Very unsatisfying*	1	2	3	4	5	*Very*

18. Does involvement in contract farming has an impact on your livelihood?

☐ Yes ☐ No ☐ Don't know

19. How your participation in contract farming influences your livelihood?

☐ Positively ☐ Negatively ☐ Does not influence ☐ Don't know

Future plans in relation to contracts

20. Are you planning to stay in contract for Paprika in the coming years?

☐ Yes ☐ No ☐ Don't know

21. Are you planning to have contract for any new crop in the coming years?

Input supply and extension services

☐ Yes ☐ No ☐ Don't know

22. What farm inputs do you use for producing Paprika (tick all that applies)**?**

☐ Seed ☐ Fertilizer ☐ Pesticide
☐ Chemicals ☐ None ☐ Don't know

23. How do you source your inputs for producing Paprika under the contract (tick all that applies)**?**

☐ Contractor ☐ Local input market ☐ Agro dealer
☐ Colleagues ☐ NGO ☐ Farmer union

24. How much do you pay for the seed used for planting Paprika per season (in MKW)**?**

- ☐ Less than 250
- ☐ 250 - 450
- ☐ 451 - 650
- ☐ 651 - 850
- ☐ More than 851
- ☐ Don't know

25. How much do you pay for the fertilizer for Paprika per season?

- ☐ Less than 10 000
- ☐ 10 001 - 12 000
- ☐ 12 001 - 14 000
- ☐ 14 001 - 16 000
- ☐ More than 16 001
- ☐ Don't know/not using it

26. How much do you pay for the pesticide for Paprika per season?

- ☐ Less than 2 000
- ☐ 2 001 - 3 500
- ☐ 3 501 - 5 000
- ☐ 5 000 - 6 500
- ☐ More than 6 501
- ☐ Don't know/not using it

27. How much do you pay for the chemicals (fungicides) for Paprika per season?

- ☐ Less than 2 000
- ☐ 2 001 - 3 500
- ☐ 3 501 - 5 000
- ☐ 5 000 - 6 500
- ☐ More than 6 501
- ☐ Don't know/not using it

28. How do you pay for your farm inputs for Paprika (tick all that applies)**?**

- ☐ In cash
- ☐ On credit
- ☐ Getting subsidies for inputs
- ☐ Deductions from contract payment

29. Who provides storage for your Paprika (tick all that applies**)?**

- ☐ Self
- ☐ Contractor
- ☐ Colleagues
- ☐ Club or organisation
- ☐ Vendor
- ☐ Transporter

30. Who provides transport to the collection point for your Paprika (tick all that applies**)?**

- ☐ Self
- ☐ Contractor
- ☐ Colleagues
- ☐ Club or organisation
- ☐ Vendor
- ☐ Transporter

31. What means are used for the transportation of your Paprika?

- ☐ Truck
- ☐ Car
- ☐ Motorbike
- ☐ Bicycle
- ☐ Carrying crop on the head/man power

32. How far from your house is the collection point where you deliver Paprika?

- ☐ It is on my farm
- ☐ Less than 15 min of walk
- ☐ 15 - 30 min of walk
- ☐ 31 - 45 min of walk
- ☐ 46 min - 1h of walk
- ☐ 1h of walk and above
- ☐ Not applicable

Payment and meeting the requirements

33. Do you deliver your crop on time?

- ☐ Yes, always
- ☐ Yes, mostly
- ☐ Not always
- ☐ No

34. Do you deliver an agreed quality?

- ☐ Yes, always
- ☐ Yes, mostly
- ☐ Not always
- ☐ No

35. Do you deliver an agreed quantity?

- ☐ Yes, always
- ☐ Yes, mostly
- ☐ Not always
- ☐ No

Communication, relations and networking

36. With whom do you directly communicate regarding production and marketing of your Paprika? (tick all that applies)**?**

- ☐ Contractor
- ☐ Input dealer
- ☐ Extension worker
- ☐ Club or organisation
- ☐ None

37. Are you a member of local farmer association/cooperative/club?

- ☐ Yes
- ☐ No

38. If yes, please rate the role of local farmer association/cooperative/club in representing your voice.

☐ Role: *Very unsatisfying* 1 2 3 4 5 *Very satisfying*

☐ Not applicable

39. If you are a member, does membership have added value to your farming?

☐ Yes ☐ No ☐ Not applicable

40. Are you a member of any of the following unions (tick all that applies)**?**

☐ Credit union ☐ Trading union ☐ Agricultural cooperative ☐ NASFAM

☐ Farmers Union (FUM) ☐ None

41. If yes, does the membership in unions have added value to your farming?

☐ Yes ☐ No ☐ Not applicable

42. Are you connected to any NGO within your community?

☐ Yes ☐ No ☐ Don't know

43. If yes, do you receive any assistance from NGO related to your Paprika?

☐ Yes ☐ No ☐ Not applicable

44. If yes, what kind of assistance you receive from NGO?

☐ Training/education ☐ Assistance with production process ☐ Assistance with of marketing the product

☐ Assistance with input provision ☐ Assistance with negotiation ☐ Not applicable

45. Do you receive any assistance from the Government in relation to Paprika?

☐ Yes ☐ No ☐ Don't know

46. If yes, what kind of assistance you receive from the Government?

☐ Training/education ☐ Assistance with production process ☐ Assistance with marketing of the product

☐ Subsidies for the input ☐ Assistance with negotiation ☐ Not applicable

Market and information access

47. How did you enter the contract you are having with your contractor?

☐ My own initiative ☐ Village head ☐ Extension worker

☐ Colleagues ☐ NGO initiative ☐ Contractor

48. What is your source of information on price for the product under the contract (tick all that applies**)?**

☐ Contractor ☐ Colleagues ☐ Radio/TV ☐ Extension worker

☐ Organisation ☐ Local market ☐ Digital extension (text messages) ☐ Other

49. At what stage do you know the price of the product?

☐ At the beginning of the season ☐ After planting ☐ Before the harvest

☐ After the harvest ☐ Before delivery ☐ After delivery

50. Are there other buyers interested in your crop under contract in your area?

☐ Yes ☐ No ☐ Don't know

Housing and assets

51. Do you own the house you are living in?

☐ Yes ☐ No ☐ It's a family house

52. Do you have access to electricity in your house?

☐ Yes ☐ No ☐ Solar system

53. Does your household own following assets (tick all that applies)**?**

☐ Bicycle ☐ Motorbike ☐ Radio ☐ Television
☐ Telephone ☐ Mobile phone ☐ Sewing machine ☐ Hoes/spades
☐ Axe ☐ Panga ☐ Cart ☐ Bowl

Health, education and food security

54. Do you have an access to health services when needed?

☐ Yes ☐ No

55. What is your usual expense for health services per month (in MKW)**?**

☐ Less than 2 000 ☐ 2 001 - 3 500 ☐ 3 501 - 5 000 ☐ 5 001 - 6 500
☐ 6 501 - 8 000 ☐ 8 001 and above ☐ Free service ☐ Don't know

56. How many school going children are currently in the household (from 5 – 18 years old)**?**

☐ Total of: _____

57. How many school going children are attending school regularly (every week day)**?**

☐ Total of: _____

58. What is your usual expense for schooling per term (in MKW)**?**

☐ Less than 5 000 ☐ 5 001 - 8 500 ☐ 8 501 - 11 000 ☐ 11 001 - 14 500
☐ 14 501 - 17 000 ☐ 17 001 - 20 500 ☐ 20 501 and above ☐ Free education
☐ Not applicable

59. What is your usual expense for food per month (in MKW)**?**

☐ Less than 3 000 ☐ 3 001 - 5 500 ☐ 5 501 - 7 000 ☐ 7 001 - 9 500
☐ 9 501 - 11 000 ☐ 11 001 - 13 500 ☐ 13 501 - 15 000 ☐ 15 001 - 17 500

☐ 17 501 - 19 000 ☐ 19 001 - 21 500 ☐ 21 501 - 23 000 ☐ 23 001 and above

60. Does your household have problems in securing enough food for everyone during some months of the year (tick all that applies)**?**

☐ January ☐ February ☐ March ☐ April
☐ May ☐ June ☐ July ☐ August
☐ September ☐ October ☐ November ☐ December
☐ Not applicable

Farm characteristics

61. What is the size of the land you are cultivating at the moment (all land, not just the plots under contracted crop, in acres)**?**

☐ Less than 0,25 ☐ 0,25 - 0,4 ☐ 0,5 - 0,6 ☐ 0,7 - 0,8
☐ 0,9 - 1 ☐ 1,1 - 1,5 ☐ 1,6 - 2 ☐ 2,1 and above

62. Do you own the land you are cultivating?

☐ Yes ☐ No ☐ It's family land

63. Do you rent any land for cultivating crops?

☐ Yes ☐ No

64. What is the size of the land you are renting from the landlord (in acres)**?**

☐ Less than 0,25 ☐ 0,25 - 0,4 ☐ 0,5 - 0,6 ☐ 0,7 - 0,8
☐ 0,9 - 1 ☐ 1,1 - 1,5 ☐ 1,6 - 2 ☐ 2,1 and above
☐ Not applicable

65. What is the expense for renting the land per season (in MKW)**?**

☐ Not applicable
☐ Less than 2 000 ☐ 2 000 - 4 999 ☐ 5 000 - 7 999 ☐ 8 000 - 10 000
☐ 10 001 and above ☐ Don't know ☐ Not applicable

66. What food crops does your household cultivate (tick all that applies)**?**

☐ Maize ☐ Sweet potato ☐ Irish potato ☐ Millet

☐ Banana	☐ Cassava	☐ Rice	☐ Groundnuts
☐ Soya bean	☐ Common beans	☐ Pigeon pea	☐ Cowpea
☐ Carrots	☐ Cucumbers	☐ Other	

67. What is the size of the land on which you are cultivating Paprika?

☐ Less than 0,25	☐ 0,25 - 0,4	☐ 0,5 - 0,6	☐ 0,7 - 0,8
☐ 0,9 - 1	☐ 1,1 - 1,5	☐ 1,6 - 2	☐ 2,1 and above

68. How much of your land do you allocate for Paprika (use the visual)**?**

☐ Less than 10% ☐ 10 - 30% ☐ 31 - 50%

USE THE VISUAL ⟶

69. How much of Paprika you yield per year?

☐ Less than 100 kg	☐ 100 - 200 kg	☐ 201 - 300 kg
☐ 301 - 400 kg	☐ 401 - 500 kg	☐ 501 - 600 kg
☐ 601 - 700 kg	☐ 701 - 800 kg	☐ 801 - 900 kg
☐ 901 - 1 000 kg	☐ 1 001 - 1 200 kg	☐ 1 201kg and above

70. What is the price you are paid by your contractor per kg of your Paprika?

☐ Price in MKW: _____

71. Who makes the decision on what to cultivate on the land for the season (tick all that applies)**?**

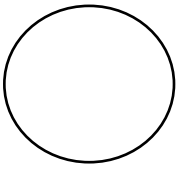
☐ Landlord	☐ Household head	☐ Head's wife/husband
☐ Contractor	☐ All HH members	☐ Household head and landlord/contractor

72. What proportion of contracted crop does the household sell to the contractor (use the visual)**?**

☐ Less than10% ☐ 10 - 30% ☐ 31 - 50%

☑ 51 - 70% ☐ 71 - 100 % ☐ Don't know

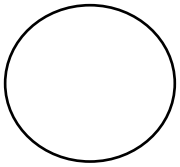
USE THE VISUAL →



73. What proportion of contracted crop does the household consume (use the visual)**?**

☐ < 10% ☐ 10 - 30% ☐ 31% and above ☐ Don't know

USE THE VISUAL →



74. Do you sell any of Paprika to anyone else but the contractor?

☐ Yes ☐ No

75. If yes, what are the main reasons selling your Paprika to other buyers (tick all that applies**)?**

☐ I don't trust my contractor
☐ I need money quickly
☐ Others offer higher price
☐ I simply don't care to whom I sell
☐ I am not satisfied with the treatment from my contractor
☐ Because I have the right to decide whom to sell
☐ Other
☐ Not applicable

76. Since you started producing crop under the contract, have you changed the plot size of other crops (food crops or other cash crops)**?**

☐ Increased ☐ Decreased ☐ No change

77. Does the income earned from contract farming suffice for the household needs during the whole year?

☐ Yes, the whole year ☐ Only partially ☐ No

78. If not, how do you compensate the lack of income (tick all that applies)**?**

☐ Income from regular work	☐ Occasional labour	☐ Off-farm activities
☐ Selling surpluses of food crops	☐ Borrowing money	☐ Not applicable

THANK YOU SO MUCH!

FOR ENUMERATOR ONLY

I hereby verify that the information in the questionnaire was collected from the household representative, recorded in a way it was answered; with nothing changed, added or subtracted. Data are true to the best of my knowledge.

Signature: _____

Appendix 3 Sample of Focus Group Interview Guides

FOCUS GROUP INTERVIEW GUIDE (I)

Small farmers having contracts for Paprika

Malawi, 2014 and 2015

Location: _____

Total number of participants: /_____/ Males: /_____/ Females: /_____/

Research assistant 1 (administrator): _____

Research assistant 2 (note taker): _____

Status of the discussion: (1 = Completed, 2 = Partially completed, 3 = Rejected/withdrawn) /_____/

Start time: /_____/ Finish time: /_____/

Date: /___/November/2014/

Conducted by:	☐	Researcher	☐	Assistant(s)
Equipment used:	☐	Voice recorder	☐	Notes

Informed consent: YES/ NO

At the beginning of the focus group interviews, the short introduction will be made (researcher's details, purpose of the research, expected outcomes and the ethical considerations - informed consent, signed on the piece of paper). Additionally, the focus group concept will be explained to the participants, as well what is considered under the main terms: supply chain and contract farming.

The focus group consists of 2 main parts and it is expected to last between 45 – 90 minutes. The first part of focus group consists of participatory approach where participants together with the researcher and facilitators make a map of the supply chain. When the mapping is done, the sketch will be exposed before the participants until the end of the focus group. The second part brings discussion topics that tend to look deeper at the relations inside the supply chain, and especially encourage opinion sharing on contract farming.

No.	**While mapping the supply chain, to the best knowledge of participants, please answer following questions:**
1	Who is involved in this Paprika supply chain?
2	How are players connected (how do they communicate, through what means)?
3	What is the role of each player in the supply chain?
4	In this supply chain, which player(s) make the most important decisions (specify what is meant by 'important decisions': pricing, grading, timing, quality, quantity, credits/loans, etc.)
5	Expand the map with adding appropriate: (i) Existing enabling environment = Who else is included in this supply chain too? PROBING QUESTIONS: Is it NGO? Government? Farmer's union? International organisations? Name them. (ii) Geographical distribution/travelling path of the produce = Do you know where is your product going after you sell it to the buyer? PROBING QUESTION: Who is the final buyer of your product? (iii) Calendar of farming practices and marketing = When is the planting period? When is the cultivation period? When is the harvesting period? When is the drying period? When do you sell your produce? When and how do you transport your produce?

No.	**Section 1: Motivation for entering the contract arrangement**
6	Why did you decide to have the contract with your buyer? PROBING QUESTIONS: What was the most important reason for entering? Price? Secure market? Trust? Good reputation? Input provision? Transport? Costs? Are there any other buyers interested in your produce?
7	What do you think why some of your neighbour farmers do not have the contracts?

No.	**Section 2: Farmers' preferences regarding contract formulation**
8	What do you think are the most important parts in the contract? (List them first and then rank them.) PROBING QUESTIONS: Price Time frame Quality and safety standards Quantities Input provision Extension services Insurance Credit access Penalties for breaching the contract
9	Would you like to change anything in your contract? PROBING QUESTIONS: If so, why? What exactly would you like to change? How should a good contract look like in your opinion (catch all the categories, possible quantities and numbers)? How should a good relation with your contractor look like in your opinion?
10	At the moment, can you easily meet the requirements for the quality and quantity on time? PROBING QUESTIONS: If not, why? Is there any difficulty with the formulation of the contract? Why/what exactly?

11	**What inputs do you use in production of Paprika?** **From where do you source your inputs for the production of contracted crops (seeds, fertilizer, pesticides, and other chemicals)?** **PROBING QUESTIONS: Do you know the exact price of each input you are using? How do you pay for your inputs? Do you have the choice among few input providers? How easy is for you to get your inputs? Are you satisfied with your current input provider? Would you like to change anything?**

CATEGORY	QUANTITY per acre	IN MKW
Inputs		
- seed		
- fertilizers		
- pesticides		
- fungicides		
- other chemicals		
Machinery		
- type:		
- type:		
- type:		
- type:		
- type:		
Labour		
- family force (no. of members working)		
- hired force		
Other costs		
- transportation		
- packaging		
- storage		
- other:		
- other:		
Yield of paprika per acre		
Price received for paprika (1 kg)		
Usual amount of loan to repay per season		

12	What extension services are provided for you from your contractor? PROBING QUESTIONS: Do you think any other services should be provided to you? Which ones? Why?

No.	**Section 3: Contract farming perception in the community**
13	What is your opinion on the contract you have with your contractor? PROBING QUESTION: Are you satisfied? Why?
14	What do you gain from being part of the contract? PROBING QUESTIONS: What are the advantages about having the contract? Are you treated differently in the business environment and/or in the community because you have contract? If so, how? Are you proud of having the contract? What do you think about the distribution of benefits in this producer-contractor relationship? Why?
15	Are there any low sides of having the contract? PROBING QUESTION: Do you face any problems because of having the contract?
16	Does having the contract have any impact on your livelihood? PROBING QUESTIONS: Do you think your livelihood conditions (*food availability and security, income generation - **do you think you earn enough income**, networking, farming practice, health conditions of the whole household, education opportunity for the children, access to credits and other public services*) are any different since you are involved in contracted production? Why?
17	How do you see yourself compared to your neighbours' farmers without contracts? PROBING QUESTIONS: Are there any differences between your livelihood level and their? Why?

No.	**Section 4: Communication, information, bargaining and breaching**
18	What do you think about the relations inside your supply chain? In your opinion, do you think that, as a small farmer, you can contribute to improvement of relations inside your supply chain? PROBING QUESTIONS: Do you think something should be changed? What things should be changed, and what things should be left as they are? Do you think you can make changes? Who is responsible for making those changes and improvements?
19	Do you trust your contractor? PROBING QUESTIONS: Why? What is your experience with your contractor? Do you trust other players in the supply chain? Why? What is your experience with them?
20	From whom/where from do you get the information regarding production and marketing of Paprika (for example: price for your produce and inputs; the quality and quantity of inputs required for your production; possibility for getting the loans)? PROBING QUESTIONS: In what form are the information presented to you? How often do you get the information?
21	Are the information regarding the price and other requirements for contracted crops on time? Are the information accurate? Are the information sufficient for you to make decisions about your produce?
22	Do you negotiate with your contractor? PROBING QUESTIONS: Who negotiates (you personally or the association or third party in your name)? Can you use the information on, e.g. local prices or input prices in your negotiating process? How do you see yourself in the process of negotiating? Do you have the option to negotiate with your contractor regarding: (i) Pricing? (ii) Grading system? (iii) Timing? (iv) Quantity of produce? (v) Quality of the produce? (vi) Loans? Do you achieve what you are negotiating? How and/or why?
23	Have you ever experienced the situation where the price in the contract is not the same as the price on the market (higher or lower) for your Paprika? PROBING QUESTIONS: How do you deal with this situation with your contractor? What price do you get then (as written in the contract/higher/lower)?
24	Do you know what are your obligations regarding the contract? Do you know what happens if you breach the contract? PROBING QUESTIONS: What happens if the contractor breaches the contract? Do you feel that you have to bear a certain risk in this contracted production? Why/which one? How do you cope with that risk? Is the risk equally divided between you as a producer and the contractor? Why? Can you negotiate with the contractor about the risk sharing? Why? Do you sell your Paprika to other buyers except your contractor? What are the main reasons for that (e.g. needing money quickly, they offer better price, etc.)?

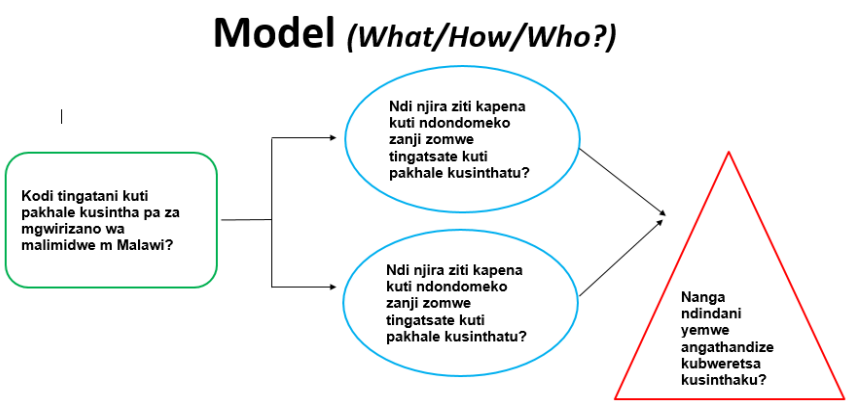
No.	**Section 5: Future plans**
25	Are you considering having the contract for Paprika in the future? Are you considering having the contract for Paprika with the same contractor in the future? Will you change the volumes produced under the contract? PROBING QUESTION: Why?
26	If not yet a member, do you consider joining a Farmer's association? PROBING QUESTION: Why?

SIGNATURES MARKING INFORMED CONSENT (Participants signed the sheet)

FOCUS GROUP INTERVIEW GUIDE (II)

Small farmers having contracts for Paprika

Malawi, 2016

Task	Description
Setting the environment	The facilitator will ask the village chief to start the event with the prayer and continues with appropriate greetings. Then the facilitator explains the purpose of data dissemination and what will be the role of participants in FG interviews.
Challenges	The researcher and facilitator will place the paper with Challenges written in Chichewa to be visible to all participants. After the short presentation of key challenges found in the paprika contract farming arrangements in Malawi, participants will be asked to look at challenges, think about them and discuss them (e.g. add new challenges and/or agree with proposed ones). The facilitator will be giving the feedback to the researcher as the discussion develops. Duration: 10 minutes.
Ranking Challenges	The researcher and facilitator will place 11 boxes (sheets of paper) with Challenges written in Chichewa in front of participants and the facilitator will give instructions to rank Challenges by locating sheets according to what participants consider are the most urgent Challenges. The point of the exercise is to get those 11 Challenges listed according to the priority from 1-11. The facilitator will help farmers to understand the task and the researcher will write the final list on the flipchart/poster. Duration: 30 minutes.
Discussion on Solutions through the Model *What/How/Who*	The facilitator will call all participants to discuss on presented ranked challenges in the supply chain. The discussion will be formed around stated challenges and finding solutions by following the Model presented in Chichewa language:  The aim is to address each challenge (11 in total in figure) by answering questions and following the flow in this proposed Model. Duration: 1 hour approximately.
Summarising challenges and options on the poster	With the help of the researcher, the facilitator will write up in Chichewa the main challenges and related options identified to address those challenges and improve contracting conditions in the community on the poster. The poster will remain with the village head.

Material outcomes from each FG interview:

- Rank of 11 challenges by priority
- Addressed 11 challenges through Model What/How/Who and summarised in the poster

Appendix 4 Sample of the Preliminary Expert Semi-structured Interview Guide, Synthesised Semi-structured Interview Guide and Focus Group Discussion Guide for key stakeholders

Expert semi-structured interview guide

Introduction: My name is Lana and I am 1st year PhD student at University College Cork, Ireland. My PhD Project is entitled dealing with contract farming and supply chains in Malawi. I am conducting an expert interview to which you are invited to participate since your insights are valuable source of information for my research.

Objectives: In this interview I would like (i) to hear your opinion about the topics we will tackle, (ii) to learn from your experience, (iii) to discuss the approach I am planning for this research, and (iv) to position the research in existing body of knowledge.

Time frame: approximately 45 – 60 minutes

Equipment: Recording software

Date: _____

No.	**Section 1: General on contract farming**
1	What is your opinion on contract farming?
2	What are the main advantages for (i) private sector companies and (ii) small farmers in contracted production? What features of contracted production are well developed?
3	What are the main limiting factors for (i) private sector companies and (ii) small farmers in contracted production? What features of contracted production are not well developed?
4	What are the main challenges in contract farming?
5	Who are contract farmers from your own experience?
6	Who are non-contract farmers?
7	What is the main difference/advantage of contract farming compared to production without contract?

No.	**Section 2: Farmer's choice and preferences**
8	What are your ideas on what makes farmers to engage in contract farming?
9	Why farmers decide to stay away from contracting?
10	What are farmer's preferences regarding contract farming? Why?

No.	**Section 3: Controversy of contract farming**
11	Introduction to the question: today the two different opinions arise regarding contract farming. From one side, it is considered as business model that is directed towards making profit, and includes farmers, which are capable of meeting the requirements (most often large and medium scale farmers, and small better off farmers). On the other hand, some NGOs are devoted to promotion of contracted production as the way out of poverty for most vulnerable small scale farmers. The debate is on–going. The question: Is contract farming anyhow controversial (likely to give rise to controversy or public disagreement)? Should it be considered as exclusively business model or one of the ways of beating poverty? Why do you hold that opinion?

No.	**Section 4: Strategy for contract farming**
12	Is it better to promote contracting for medium-scale farmers or small-scale farmers in Africa? Why do you hold this opinion? Do you have any evidences/experience to share that supports your opinion?
13	Which supply chains work better for small-scale farmers: export chains or traditional local markets or supermarket chains? Why do you hold that opinion? Any evidences?
14	Are there some other options besides contract farming?

No.	**Section 5: Relations inside supply chain**
15	What is the most important in supply chain relations? Can the 'philosophy' of the value chains that operate in Western countries be implemented into African context (What are the differences and similarities? Why some things work and other do not?)? Are there possibilities for improving relations in supply chains?
16	How can stakeholders be better connected?

No.	**Section 6: Role of enabling environment**
17	What is the role of NGOs in contract farming?
18	What is the role of Government in contract farming?
19	What is the role of research units and institutes (e.g. your institution/Department) in contract farming?

No.	**Section 7: Price volatility and contract farming**
20	How do contracting small farmers respond to price volatility on the market (taking into consideration they are both buyers and producers of the food)?
21	What does price volatility mean for contracted production – both for contractors and small producers?
22	How does price volatility affect small producers' livelihood?
23	What happens in the situations when a good harvest 'crashes' the prices of the certain commodity?
24	In the situation described above, is it better to have contracts or not? Why is that so?
25	Is the Government anyhow responsible for mitigating the effect of price volatility regarding the vulnerable groups (contracting small farmers) even though they (farmers) are in business relations with contractors (so the market rules apply only)?

No.	**Section 8: Future of contract farming**
26	What steps are needed in order to improve contract farming?
27	Who is responsible for that steps/change?
28	Where do you see the future of contract farming in Africa?
29	Where do you see small-scale farmers in the future?
30	Generally, what is the future of contracted production?
31	And what is the future of production without contracts?
32	*Considering the recent elections in Malawi, what do you think about the implications for small farmers? What do you expect from the new Government regarding the direction of agricultural strategy? IF APPLICABLE*
33	*What implications will the change or the same status have for small farmers? IF APPLICABLE*
34	*At the moment, is there a clear strategy or initiative regarding Malawian agriculture: to push for export cash crops or develop local and regional traditional markets or to direct cash crop production for supermarket supply? IF APPLICABLE*

Table 4.1 List of contacted experts by institution (Skype Semi-Structured Interview)

No.	*Institution*	*Research period*
1	Wageningen University, the Netherlands	July 2014
2	Overseas Development Institute (ODI), United Kingdom	July 2014
3	School of Oriental and African Studies, University of London, (SOAS), United Kingdom	August 2014
4	Food and Agriculture Organization of the United Nations (FAO), consultant, Italy	August 2014
5	German Agency for International Cooperation (GIZ), Germany	
6	Technical Centre for Agricultural and Rural Co-operation ACP-EU, the Netherlands	August 2014
7	Indira Gandhi Research Institute, India	September 2014
8	Consultancy, Malawi	November 2014
9	Food and Agriculture Organization of the United Nations, Rural Infrastructure and Agro-Industries Division, Italy	December 2014
10	University of Pretoria, Department of Agricultural Economics, Extension and Rural Development, South Africa	March 2015

Synthesised semi-structured interview guide for the key stakeholders

No.	Section 1: General on contract farming
1	What is your opinion on contract farming? PROBING QUESTIONS: What is the status of contract farming in Malawi? To what extent are farmers engaging in contracted production? Why? What are the main driving factors for engaging in contract farming? What are the most important crops under contract farming in Malawi?
2	Are there any advantages for (i) private sector companies and (ii) small farmers in contracted production? In your opinion, what aspects of contract farming are developed?
3	Are there any limiting factors for (i) private sector companies and (ii) small farmers in contracted production? In your opinion, what aspects of contract farming are not developed?
4	In your opinion, what are the main challenges in contract farming?
5	From your own experience, who are contract farmers in Malawi?
6	From your own experience, who are non-contract farmers in Malawi?
7	Is there any difference between contract farming compared to production without contract? If so, where is that difference visible?

No.	Section 2: Farmer's choice and preferences
8	What are your ideas on what makes farmers engage in contract farming? Why some farmers decide to stay away from contracting?
9	From your own experience, what are farmer's preferences for the points in the contract (regarding timing, quantities, qualities, input provision, credit provision, and extension services)?

No.	Section 3: The core of contract farming
10	In your own opinion, should contract farming be considered as exclusively business model that supports economy growth or one of the ways of beating poverty? Why do you hold that opinion?

No.	Section 4: Strategy for contract farming
11	In your own opinion, is it better to promote contracting for medium-scale farmers or small-scale farmers in Malawi? Why do you hold this opinion? Do you have any evidences/experience that support your opinion?
12	In your opinion, which supply chains are more efficient for small-scale farmers: export chains, traditional local markets or supermarket chains? Why do you hold that opinion? Any evidences?
13	In your opinion, are there some other (institutional) options besides contract farming in Malawi?

No.	Section 5: Role of enabling environment
14	What is the role and responsibility of your organisation/Department in contract farming? Does your organisation/Department develop/follow any official strategy/recommendations regarding contract farming?
15	In your opinion, what is the role and responsibility of Government in contract farming?
16	In your opinion, what is the role and responsibility of Farmer's union/cooperatives in contract farming?
17	In your opinion, what is the role and responsibility of academic and research units in contract farming?

No.	Section 6: Price volatility and contract farming
18	In your own experience, how do contracting small farmers respond to price volatility on the market?
19	In your own opinion, what does price volatility mean for contracted production – both for contractors and small producers?

20	In your own opinion, how does price volatility affect small producers' livelihood?
21	In your own opinion, is anyone responsible for mitigating the effect of price volatility regarding the vulnerable groups - contracting small farmers?

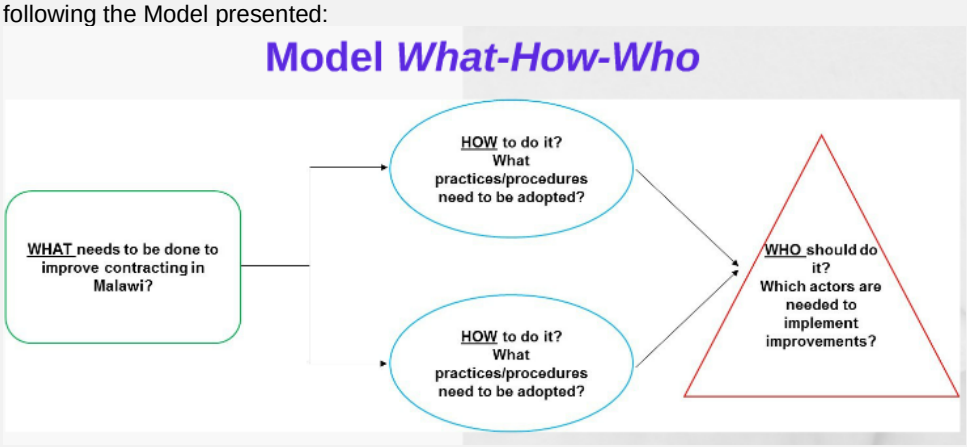
No.	**Section 7: Future of contract farming**
22	In your opinion, are there any steps needed in order to improve contract farming? If so, who should take those steps?
23	In your opinion, where do you see the future of contract farming in Malawi?
24	In your opinion, where do you see Malawian small-scale farmers in the future?
25	In your opinion, considering the recent elections in Malawi, are there going to be any implications for small farmers? What do you expect from the new Government regarding the direction of agricultural strategy?
26	At the moment, to the best of your knowledge, is there a clear strategy or initiative regarding cash crop production in Malawi? (E.g. to push for export cash crops, or develop local and regional traditional markets, or to direct cash crop production for supermarket supply?

Table 4.2 List of interviewees

(*Semi-structured Interviews, **Skype Interview and ***Email correspondence)

N0.	**INSTITUTION/SECTOR**	**RESEARCH PERIOD**
1	NASFAM*, Lilongwe, Malawi	November 2014
2	FUM*, Lilongwe, Malawi	April 2015
3	CISANET*, Lilongwe, Malawi	November 2014
4	Concern Universal*, Lilongwe, Malawi	November 2014
5	Concern Universal*, Nkhotakota, Malawi	November 2014
6	Ministry of Agriculture, Irrigation and Water Development*, Lilongwe, Malawi	November 2014
7	Ministry of Agriculture, Irrigation and Water Development*, Lilongwe, Malawi	April 2015
8	TLC**, Nhkotakota, Malawi	December 2014
9	University, Chancellor College* (interviewed in Lilongwe, Malawi)	November 2014
10	University, Chancellor College* (interviewed in Lilongwe, Malawi)	November 2014
11	Lilongwe University of Agriculture and Natural Resources*, Lilongwe, Malawi	November 2014
12	Consultancy sector***, Lilongwe, Malawi	November 2014
13	Consultancy sector***, Lilongwe, Malawi	November 2014
14	African Institute of African Citizenship***, Lilongwe, Malawi	November 2014
15	Company (CEO*), Lilongwe, Malawi	November 2014
16	Company (Projects Manager)*, Lilongwe, Malawi	March 2015
17	Company (extension field officers)*, Lilongwe, Malawi	November 2014 and March 2015
18	Vendor 1*, Lilongwe, Malawi	March 2015
19	Vendor 2*, Lilongwe, Malawi	March 2015
20	Vendor 3*, Lilongwe, Malawi	April 2015
21	Processor in South Africa**	November 2015

Focus group discussion guide with the key stakeholders

Task	Description
The Schedule for the Focus group discussion	10:30 am – Greetings and introduction to the FG discussion 10:40 am – Presentation of study findings 11:00 am – Interactive discussion with stakeholders 12:45 am – Summary of discussion points 01:00 pm – Final word and wrapping up
Ranking Challenges	After the presentation of the key challenges, each participant will receive one-page paper with the task to rank priorities. The point of the exercise is to get those 11 Challenges listed according to the priority from 1-11. Duration: 10 minutes.
Discussion on Solutions through the Model *What/How/Who*	The researcher will invite all participants to discuss on presented challenges in the supply chain. The discussion will be formed around stated challenges and finding solutions by following the Model presented:  The aim is to address each challenge (11 in total in figure) by answering questions and following the flow in this proposed Model. Duration: 1,5 hours approximately.
Evaluating Researcher's Model	After the discussion on options for improving contracting conditions in Malawi's paprika supply chain, the researcher will present its own Model based on the data collected, experts interview and literature review. Participants are invited to comment the Model, compared it with what has been discussed and evaluate it. Duration: 20 minutes.

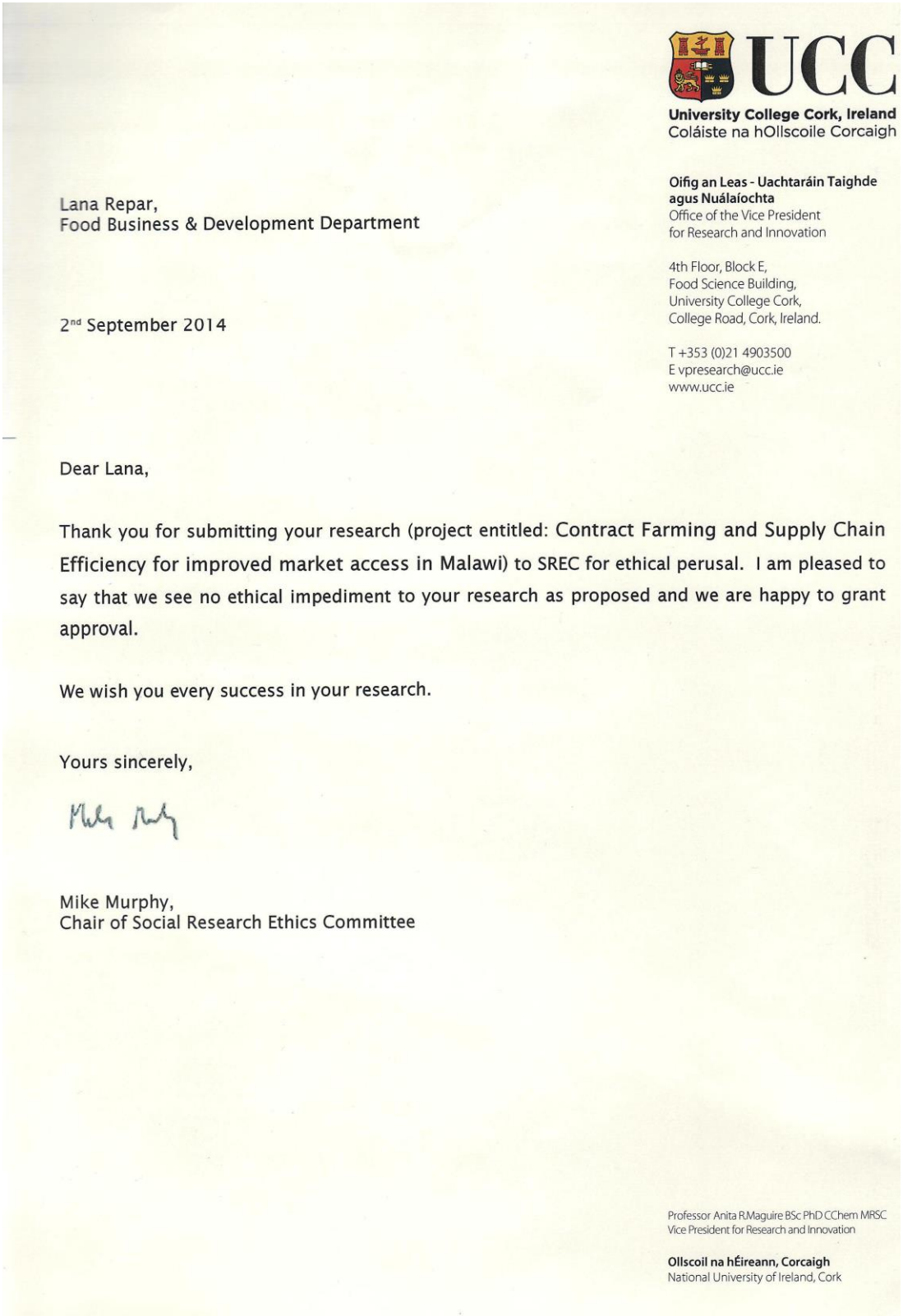
Material outcomes from each FG discussion:

- Rank of 11 challenges by priority
- Addressed 11 challenges through Model What/How/Who

Table 4.3 List of participants (Focus Group Discussion with the key stakeholders in Lilongwe, Malawi)

NO.	INSTITUTION/SECTOR	RESEARCH PERIOD
1	NASFAM	July 2016
2	University (Chancellor College)	July 2016
3	Concern Universal	July 2016
4	Consultancy sector	July 2016
5	Consultancy sector	July 2016
6	GIZ	July 2016
7	Company	July 2016
8	Ministry of Agriculture, Irrigation and Water Development; 5 members from the Agricultural Planning Department	July 2016

Appendix 5 Ethical Approval for the Research



UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Oifig an Leas - Uachtaráin Taighde agus Nuálaíochta
Office of the Vice President for Research and Innovation

4th Floor, Block E,
Food Science Building,
University College Cork,
College Road, Cork, Ireland.

T +353 (0)21 4903500
E vpresearch@ucc.ie
www.ucc.ie

Lana Repar,
Food Business & Development Department

2nd September 2014

Dear Lana,

Thank you for submitting your research (project entitled: Contract Farming and Supply Chain Efficiency for improved market access in Malawi) to SREC for ethical perusal. I am pleased to say that we see no ethical impediment to your research as proposed and we are happy to grant approval.

We wish you every success in your research.

Yours sincerely,

Mike Murphy,
Chair of Social Research Ethics Committee

Professor Anita R.Maguire BSc PhD CChem MRSC
Vice President for Research and Innovation

Ollscoil na hÉireann, Corcaigh
National University of Ireland, Cork

Figure 5.1 Ethical approval obtained on 2nd September 2014 prior to the field research from the Social Research Ethics Committee at University College Cork

Appendix 6 Conference Contributions, Manuscripts and Presentations

CONFERENCES:

1) Tropentag, September 17-19, 2013, Stuttgart-Hohenheim, *'Agricultural development within the rural-urban continuum'*. Poster presentation **Contract Farming as Business Model for Sustainable Rural-Urban Supply Chains: Sincere Efforts or Just Profit?** Authors: Lana Repar, Stephen Onakuse, Joe Bogue and Ana Afonso.
2) Tropentag, September 17-19, 2014, Prague, Czech Republic, *'Bridging the gap between increasing knowledge and decreasing resources'*. Poster presentation **Management in Agri-Food Chains: What Do We Know about Contracts and How to Move Forward?** Authors: Lana Repar, Stephen Onakuse, Joe Bogue and Ana Afonso.
3) Tropentag, September 17-19, 2014, Prague, Czech Republic, *'Bridging the gap between increasing knowledge and decreasing resources'*. Poster presentation **Impact of Crop Production Strategies on Household Food Security and Welfare in Malawi's Central Region** Authors: Gretta Fitzgerald, Lana Repar, Nicholas Chisholm, Mike FitzGibbon, Howard Dalzell.
4) Forthcoming: June 15-16, 2017, Dubrovnik, Croatia, *International Food Marketing Research Symposium*. Oral presentation: **Food Supply Chain Contracts in Vertical Marketing Systems** Authors: Lana Repar, Joe Bogue, Stephen Onakuse and Ana Afonso.

PUBLISHED MANUSCRIPT:

- Repar, L., Onakuse, S., Bogue, J. and Afonso, A. (2017) '**Optimising contract design in modern food supply chains: The case of paprika sector in Central Malawi**'. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, 118(1), pp. 113-127.

PUBLISHED PAPER IN AN EDITED BOOK:

- Repar, L., Onakuse, S., Bogue, J. and Afonso, A. (2015). Case study of paprika supply chain efficiency in Malawi Central region. In: Escajedo San Epifanio, L. and De Renobales Scheifler, M., (Eds.). Envisioning a future without food waste and food poverty. Societal challenges. Wageningen Academic Publishers, the Netherlands: pp. 143-148.
  Note: This paper was presented as an oral presentation at the International Conference, November 17-18, 2015, Bilbao, Spain, '*Envisioning a Future without Food Waste and Food Poverty: Societal Challenges*'.

MANUSCRIPTS IN REVIEW PROCESS:

1) Repar, L., Onakuse, S., Bogue, J. and Afonso, A.: **Exploring key challenges in paprika supply chain in Malawi: New evidence on contract farming performance**. Under revision at *Development in Practice*.
2) Repar, L., Onakuse, S., Bogue, J. and Afonso, A.: **Is It All About the Money? Extent, Reasons and Triggers for Side-selling in Malawi's Paprika Supply Chain**. Under revision at *International Journal on Food System Dynamics*.
3) Repar, L., Onakuse, S., Bogue, J. and Afonso, A.: **In our Out? Determinants of Participation in Farmers' Organisation among Small-scale Farmers under Contract Scheme in Central Malawi**. Intended to submit at *Journal of Rural Studies*.
4) Repar, L., Onakuse, S., Bogue, J. and Afonso, A.: **Expanding Contracted Production to New Crops: Evidence from Nkhotakota and Lilongwe Districts in Central Malawi**. Intended to submit at *NJAS Wageningen Journal of Life Sciences*.

PRESENTATIONS:

- GCARD 3 2015-2016 Global Conference for Agricultural Research for Development, April 5-8 2016, Johannesburg, South Africa, Topic 3 *Keeping Science Relevant and Future-Focused*, **Multidisciplinary PhD Training Systems and Relevance of Research to Development: Lessons from AGTRAIN's and ARI's Experience in Europe and Africa**, oral presentation as an AGTRAIN and YPARD Representative
- Participation in Doctoral Showcase 2014(10th of June) at the University College Cork in the category *The Grand Plan*: Beating the Poverty by Using Rich People's Weapon: Is the Introduction of Business Contracts in African Agriculture a Huge Mistake?
- Annual Review presentation and reports at the Food Business and Development Department, December 2013, 2014 and 2015.

Appendix 7 Materials Used for Dissemination of the Study's Findings

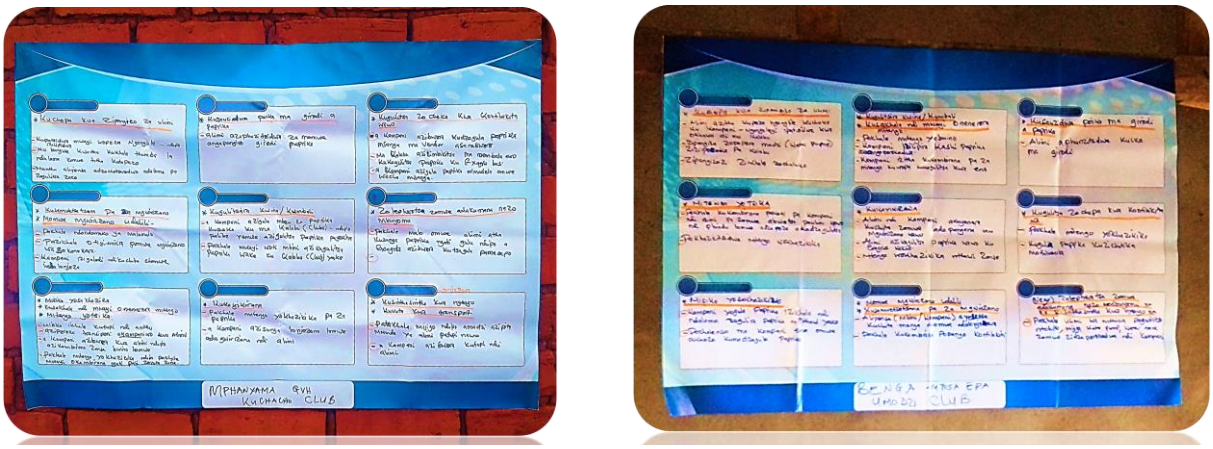


Figure 7.1 Posters with the key propositions on how to improve contracting conditions that remained within local communities at Kuchacho club (Lilongwe district) and Umodzi club (Nkhotakota district), Malawi July 2016

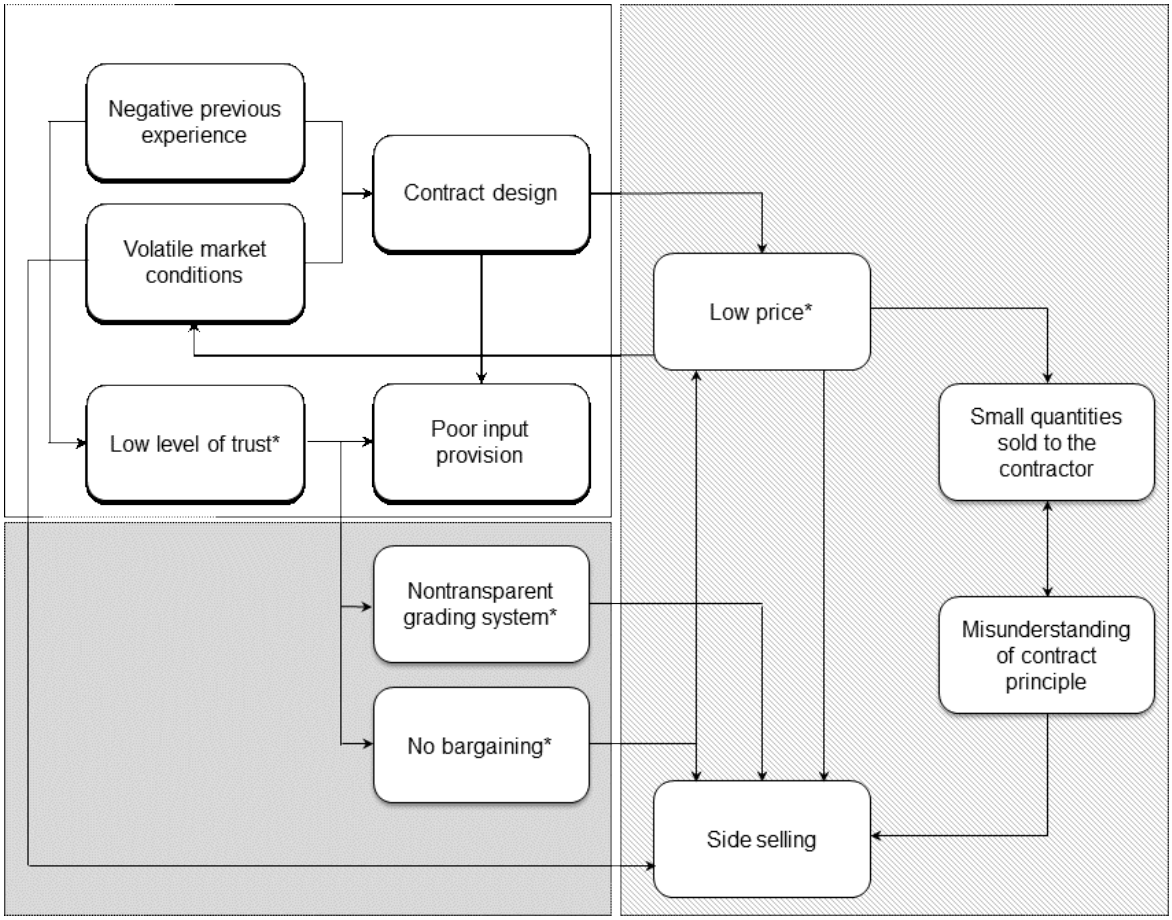
Figure 7.2 Ranking task performed during the Focus group interview in Lilongwe district, Malawi July 2016

Your institution is (**please circle it**):

a. Company b. Ministry c. NASFAM d. University e. Institute

f. Partners/developing organisation/consultancy g. NGO h.Other:_____

Using the figure below, please rank challenges identified in the paprika supply chain. The ranking should reflect how you/your institution prioritise identified challenges. Ranking frame is from 1 to 11. LEGEND: **1 = most urgent challenge, 11 = least urgent challenge**.



1 = _____ 6 = _____

2 = _____ 7 = _____

3 = _____ 8 = _____

4 = _____ 9 = _____

5 = _____ 10 = _____

11 = _____

Figure 7.3 Ranking task performed during focus group discussion with the key stakeholders, Malawi July 2016

Appendix 8 Appropriateness of the Theoretical Framework

Table 8.1 Theoretical underpinnings compared against the status in Malawi's paprika supply chain

Theoretical underpinning		Status in paprika supply chain
Key success factors in the Supply Chain Management		
Efficient design and operation	-	Poor contract design hindered efficiency.
Overcoming uncertainties	-	Price was not stated in the contract.
Managing evolution of relations	+/-	The evolution of relations in terms of awarding long-term loyalty of small-scale farmers was only in its beginning.
Cultural differences	+/-	Contracting principles were not entirely understood by small-scale farmers; the 'tradition of dependency' was present.
Choosing appropriate supplier	+	Small-scale farmers had the advantage in paprika production and the 'social responsibility' coupled with Christian values made small-scale farmers appropriate for the Company D's suppliers.
Negotiation	-	The lack of negotiation was one of the key challenges in the chain.
Specific challenges in the Agri-food Supply Chain Management		
Long production time	+	The time needed for paprika to be harvested was around 7 months.
Seasonality	+	Paprika was available for marketing from April until December.
Diseases and weather threats	//	
Inconsistency in quality and quantity	+/-	58% of small-scale farmers delivered agreed quality always and 52% of them delivered agreed quantity always.
Low flexibility	//	
Assumptions from Proposed Theories		
Principal-Agent Theory: The principal outlines the contract that secures appropriate incentives, which will exceed any alternative choice and make the agent complete the principal's requirements.	-	The incentives secured in the contract did not exceed those of alternative choice. The contract offered only seeds and conditionally bonuses for achieved high volumes on the group level but the price, as the most important incentive, was not attractive to small-scale farmers.
New Institutional Economics: The contract is an institutional arrangement that facilitates cooperation among parties and mitigates specific market failures, e.g. expensive inputs, lack of credit and information asymmetry.	+/-	Although the contract organised relations between the Company D and small-scale farmers, it did not overcome challenges on the input market for small-scale farmers.
Transaction Cost Economics: Employing contracts will decrease transaction costs over time.	+/-	The Company D had its supplying base of 10-15,000 small-scale farmers every year, but costs of extension services were high. Company D encountered high transaction costs due to side-selling.

Note: // not assessed/reported, * this part has been elaborated earlier in the thesis.

Table 8.1 Theoretical underpinnings compared against the status in Malawi's paprika supply chain – *Continued*

Theoretical underpinning		Status in paprika supply chain
Assumptions from Proposed Theories		
Asymmetric Information: The two parties in the transaction do not have the same information.	+	The Company D withheld the information on the price until one month before the marketing. Also, small-scale farmers were missing the information on the end market and precise guidelines on grading principles.
Opportunistic Behaviour: A dishonest behaviour practiced by one or both parties to shirk or disguise the actual conditions related to the contract performance. • *Ex ante* opportunism (e.g. manipulation with input loans) • *Ex post* opportunism (e.g. side-selling)	+ +	*Ex ante* opportunism: the Company D cut this type of opportunism by refusing to offer loans of any kind based on previous negative experiences. *Ex post* opportunism: side-selling was one of the key challenges in paprika supply chain.
Bounded Rationality: Parties are limited in their perception of the world and economic transactions.	+	Small-scale farmers were in particular limited in their perception on contracting principles and transaction costs related to it.
Contract Incompleteness: Contract does not contain all the necessary information and does not describe all possible present and future 'states of the world' or parties' rights and responsibilities.	+	The contract had: Partially defined clause: the price Missing clauses: delivery conditions, grades, termination, disputes, applicable law, *force majeure*.
Key Contract Farming Benefits		
Access to technology and extension services	+	Contract provided extension services.
Access to inputs	+/-	Contract provided only seeds.
Access to credit	-	Contract did not provide any credits.
Secured outlet and price	+/-	Contract secured outlet, but the price was uncertain and dependent on the market.
Reduced production, marketing and transaction risks	+/-	Small-scale farmers carried production and marketing risk (*force majeure* and price).
Improved productivity, quality and income generation	+/-	Small-scale farmers reported higher productivity and quality, but the price was low.
Creating employment	//	
Key Contract Farming Challenges		
Contract design*	+	Contract design was a challenge.
Loss of autonomy	-	Not reported by small-scale farmers.
Shift of traditional production patterns	+	Paprika is not traditionally grown in Malawi.
Exploitation of small-scale farmers	+/-	As a perception, but not evidence-based.
Unequal bargaining power	+	No bargaining on the price.
Misbalanced relations in the household and community	//	
Risk of indebtedness	-	The contractor does not provide loans.
Side-selling	+	36.9% of small-scale farmers practiced it.
Input misuse	+	In previous years, reported by Company D.
Problematic contract enforcement	+	Missing national CF Strategy.

Note: // not assessed/reported, * this part has been elaborated earlier in the thesis.

Biographical note

Lana Ana Repar was born on 8th of October 1987 in Zagreb, Croatia. She obtained her BSc in Agricultural Economics (2009) and MSc in Agribusiness and Rural Development (2011) from the Faculty of Agriculture, University of Zagreb. She spent winter semester in 2010/2011 on a student exchange at the Centre for Agricultural Sciences, University of Debrecen, Hungary. In October 2013, she joined Agricultural Transformation by Innovation (AgTraIn) Erasmus Mundus Joint Doctorate Programme. Lana spent three and a half years working on the topic of contract farming in the case of Malawi and was enrolled at the University College Cork, Ireland as her primary institution and Technical University of Madrid, Spain as her second institution. She was an AgTraIn Student Representative during 2015/2016. Lana's interests include food supply chain management, food supply contract design, mixed methods and participatory approach, policy-making and advocacy in developing and developed countries.